ControlIT

AC31 – Intelligent Automation solutions

Open for the Future! Industrial^{IT}

The key to intelligent automation solutions

Future-oriented technologies necessitate intelligent solutions based on systems which can be used flexibly. Cutting your engineering costs will be more and more important in the future. It will be equally as important to assess a future-oriented system on the basis of the aspects of handling, reliability and ease of servicing.

This is exactly why engineering tools are becoming more and more important. Standardised software packages, e.g. to IEC 61131-3, point the way to an open automation structure.

The emphasis is also on continuity in systems engineering, as on the AC31 automation system from ABB. Thus, the time-proven programmable controllers of the AC31 family are becoming more and more powerful and even more flexible in use. The new high-performance units are an integral part of Industrial^{IT}, ABB's concept for continuous and feasable automation solutions.

For warehousing

For process automation

At pumping stations

High performance processors and a multi-tasking operating system ensure that even more stringent requirements applicable to future automation tasks can be solved optimally.
The new 907 AC 1131 programming software makes available a selection of five different, standardised configuration interfaces. Extensive Online Help and integrated visualisation allow time-optimised configuration and commissioning of the automation task.

In power generation

At waste water treatment plants

Configuration – the key to cost-cutting

The requirements made of automation on modern, modular-design machinery and systems are changing ever-faster. Future-oriented automation concepts demand solutions which stimulate technical progress.

Selection of a user-friendly, convenient programming software package is of foremost importance in configuring, programming, testing and commissioning an automation application.

The programming tool 907 AC 1131 from ABB utilises all advantages of the virtually intuitive and familiar Windows 95/98/NT GUI. This means that you can quite simply forget long familiarisation times when learning how to use a new software package.

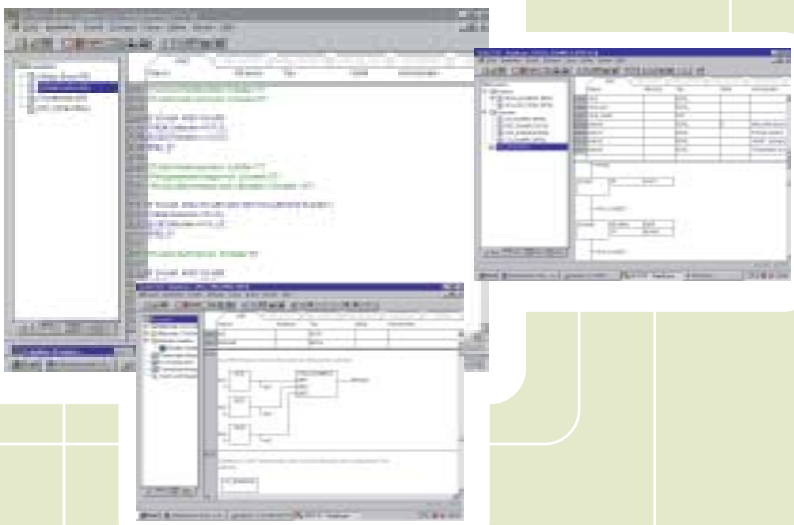
Programming to IEC 61131-3

The open, manufacturer-independent programming standard to IEC 61131-3 for automation has been implemented in the 907 AC 1131 programming software. You can thus choose what configuration interface you wish to use when writing your application:

- Ladder Diagram
- Instruction List
- Function Block Diagram
- Sequential Function Chart
- Structured Text

All users, be they plant electricians or computer scientists, thus have a configuration interface in which they can feel at home.

Programming languages to IEC 61131-3



Extended functionalities

Conversions allow a change of display modes. Integrated Online Help supports you should you not have your documentation at hand occasionally. But even when writing the pro-gram, you can choose whether you wish to use the standard functions of IEC 61131-3 (standard library) or the time-proven, familiar functionalities of the ABB library. Finally, you are free to choose whether you wish to write your own additional library with your specific functions. And, even then, you can choose your favourite programming interface.

Detailed and extensive diagnostic and Help functions reduce your testing and commissioning effort. A Status function with Snapshot option, and both overwriting and forcing variables are other functionalities which you will be familiar with, which you expect and which are offered by the 907 AC 1131 software package
Other functions, such as:
- Breakpoints,
- Single-Step mode,
- Single-Cycle mode and
- Sampling-Trace

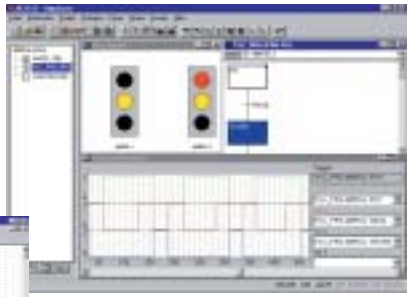
are integrated in 907 AC 1131.

Offline simulation of the IEC 61131-3 functions allows you to run a preliminary test even without a programmable controller connected. The integrated visualisation system as well can provide you with valuable assistance in implementing your project. This provides a practical cut in the planner's or commissioner's workload during the start-up phase of commissioning.

Networked programmable controllers in the ARCNET network can be chosen, programmed and tested directly from the software. A ready-integrated configuration tool for Profibus-DP also rounds off the range of functionalities provided by the 907 AC 1131 configuration software package.

Menu-driven program development

Integrated process visualisation



Sampling-Trace

The CPUs – the key to flexibility

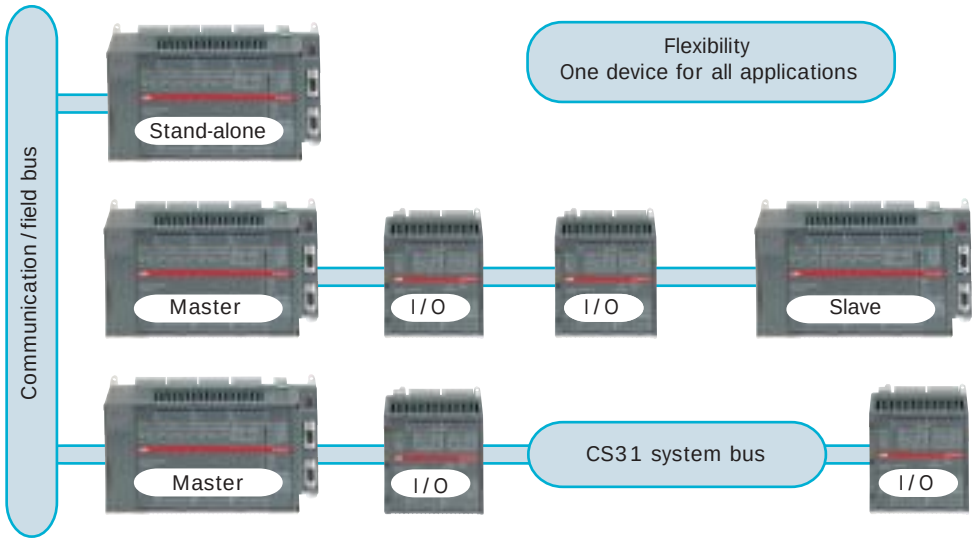
The applications in automation are as different as the tasks are diverse. Flexible systems with a high performance potential meet these requirements. The ABB system Advant Controller 31 with its open system structure and its high performance helps you to apply your know-how optimally for solving your automation problem.

Integration

The powerful programmable controllers can be used to optimum effect both in the field of mechanical engineering and in the field of plant construction. Regardless of whether there are only a few I/O signals or whether the signal scope covers a few hundred or a thousand inputs/outputs, Advant Controller 31 can be integrated easily in your automation solution. It is irrelevant to the CPUs whether they are used as stand-alone units, as Master or as Slave.

Distributed automation tasks in particular can be implemented particularly easily thanks to the integrated system bus interfaces. This means that the I/O devices are handled on the system bus as if they were an integral element of a central control system, regardless of whether the I/O device is installed 10 mm or 500 m (2 km with repeater) away from the Master system.

"Simple but offering diverse capabilities" – these are the requirements applicable to an automation system.
ABB's Advant Controller 31 is designed to provide you as the user with optimum assistance in solving your automation tasks owing to its high flexibility and easy-to-master system structure. Moreover, you have the option of selecting from diverse expansion variants.



Regardless of whether tightly packed or finely graded, expansible I/O bus modules meet your requirement profile, Advant Controller 31 makes both techniques available to you. The configurable digital and analogue input/output devices offer you particularly high flexibility for this.

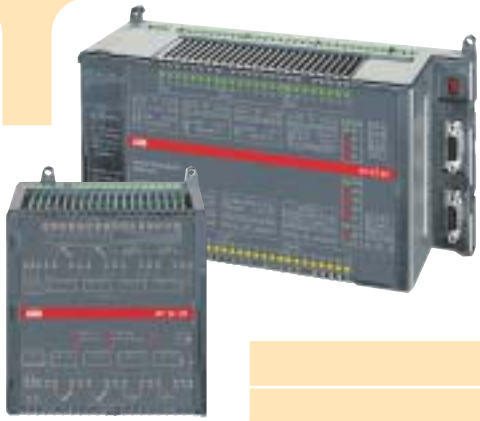
It is just as easy to make modifications to the system. Bus modules can be exchanged without having to disconnect the power supply or interrupt bus operation. Even if the system is expanded, all that needs to be done is to simply extend the bus for connection of further bus modules. Bus modules added are detected automatically by the system, and the components are uniquely identified to the system bus and addressed by the system bus via the module address. The setting is made, independently of the module type used, either using an address switch on the I/O devices or via system constants on the programmable controllers. This allows the I/O devices to be addressed directly from the user program. There is no additional effort for bus configuration.

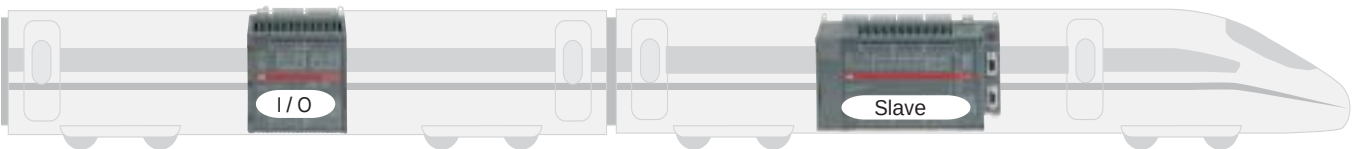
Well-conceived functionality

Future-oriented automation systems should make available maximum self-diagnosis capability to the user. The systems engineering of Advant Controller 31 offers automatic diagnosis of the CPU, system bus and connected I/O devices. Optional diagnostic functions, such as discontinuity, short-circuit and overload, can be polled as required.

All modules of the AC31 system feature excellent ease of installation. The compact plastic housings can be snapped easily onto a 35 mm DIN rail or attached to a mounting plate using

The compatible devices of Series 40...50





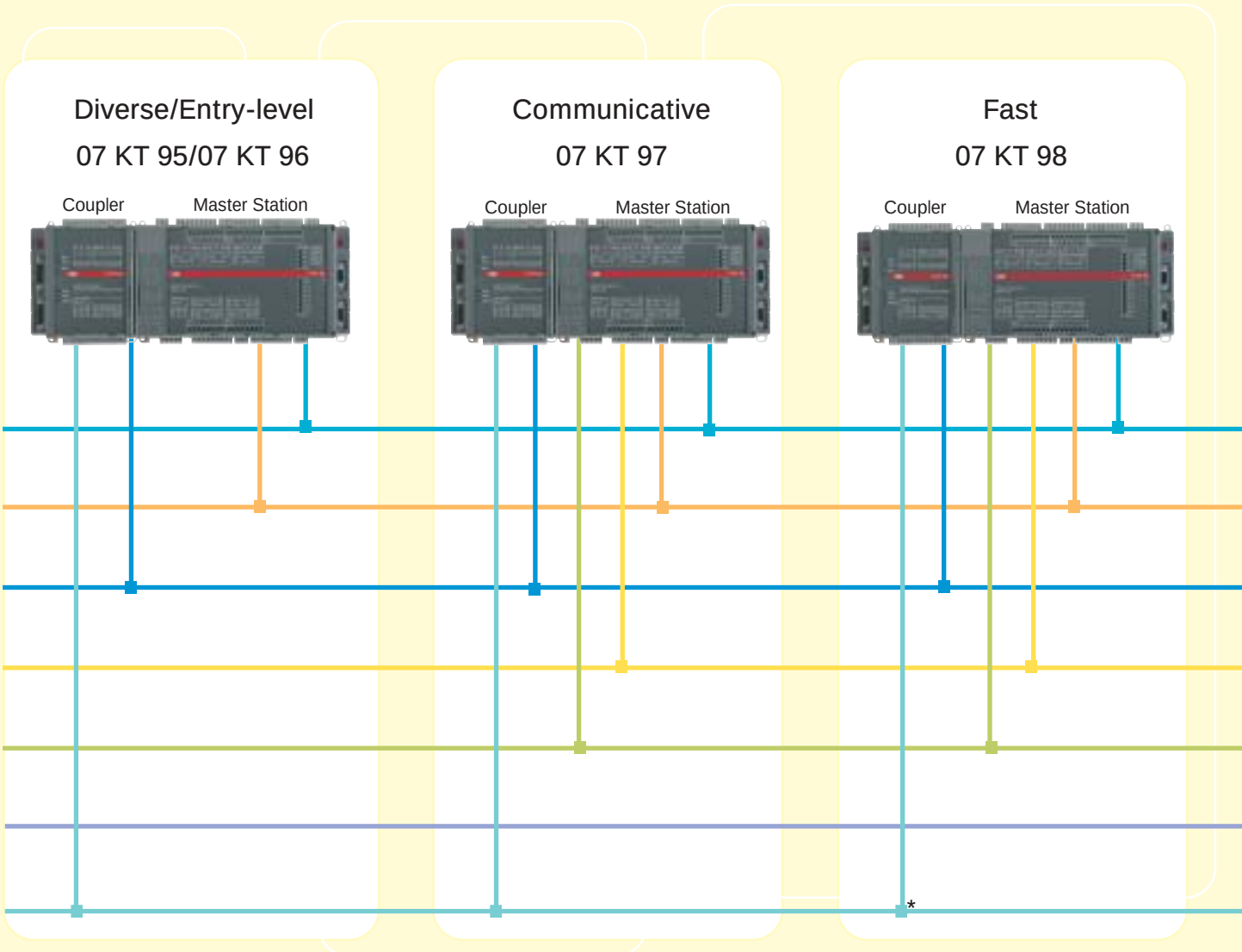
Communication – the key to understanding

The CS31 system bus forms the basis for communication of ABB's AC31 intelligent automation system. It establishes the link between the CPUs and the I/O devices. The CS31 system bus is an RS 485 two-wire bus designed for interference immunity and fast data transmission. Up to 31 bus devices can be integrated on the system bus.

MODBUS offers interfacing capabilities to programmable controllers of various manufacturers, to operator-control terminals and to PC operator workstations owing to its high popularity.

RCOM is a communication medium designed for data teletransmission. It can be used for transmission on dedicated lines or dial-up lines. Commercially available modems establish the link to the transmission media.

Profibus-DP allows Master and Slave communication in the field area. The open system structure of Advant Controller 31 ensures interfacing with automation systems of other manufactures and with intelligent front-end processing devices such as drives, actuators, operator terminals and sensor systems.

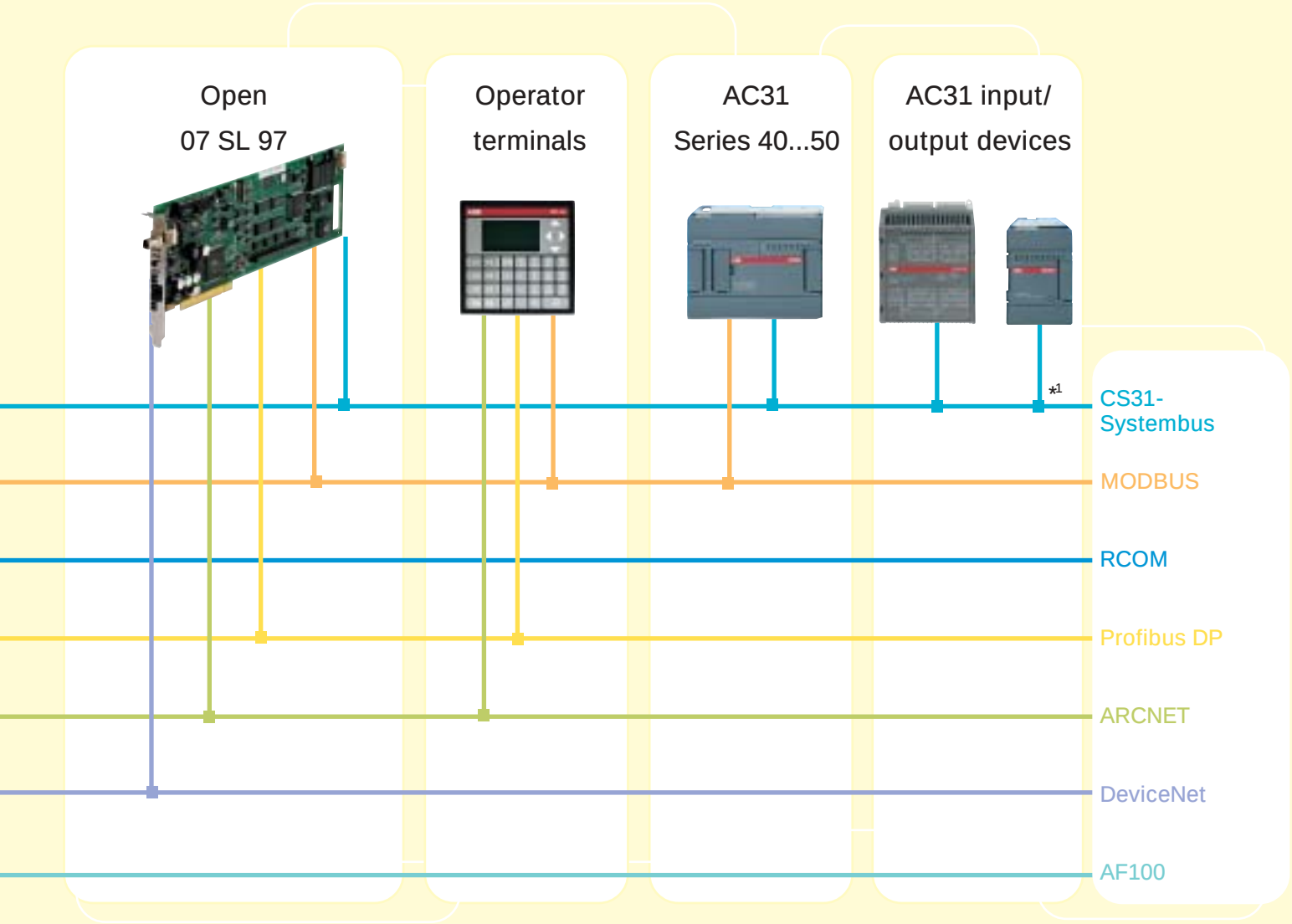


* in preparation

ARCNET – known an easy-to-handle, low-cost communication bus system – forms the basis for high-speed networking of AC31 programmable controllers and for SCADA systems, connection of systems made by other manufactures and interworking with the PC in the Advant Controller 31 system.

With integrated DeviceNet coupler for fast data exchange in the field area. For the coupling of distributed field devices like I/Os, drives and valves

AF100 is the communication interfacing facility to ABB control and instrumentation systems. This communication variant allows you to implement a system structure from the master control system through to intelligent automation systems in the field area.



*1 via bus coupler

Visualisation and operation – the key to transparency

Optimum process control does not end at the interfaces of a programmable controller. After all, cost-cutting on the end products will, in future, necessitate transparent processes to an ever-increasing extent. Convenient operation – even on a small machine – used correctly, affords advantages in machine utilisation. Thus, for instance, it is possible to diagnose and visualise preventive maintenance. Fast fault detection and logging also reduce any machine downtimes.

Operating panels

Depending on the requirements applicable to the process to be operated, products designed in line with the automation task will be required. This necessitates solution components graded in the various performance classes. The product range provides you with an extensive array of such products. The range extends from low-cost, two-line display units through to convenient, graphics-capable operator terminals.

In simple cases, the integrated serial ports can be used for connection to your programmable controllers. In networked automation applications, you are free to utilise the full flexibility of the communication options.

The operating panels provide the following communication levels as options:
- MODBUS
- ARCNET
- Profibus DP.

The operating panels
in the AC31 system

Process visualisation

In future, it will be necessary to automate complex processes intelligently and transparently and visualise them in line with requirements to an increasing extent. The ABB Advant Controller 31 system, in conjunction with a flexible and open SCADA system, can also meet these future requirements.
Integrating an automation system with related visualisation in an overall process necessitates a high degree of openness of the communication channels. A convenient GUI, integrated archiving and logging functions and trend displays in real-time are the basic preconditions for this type of process control.

Additional network capabilities, remote connection functions and standard interfaces turn modern visualisation packages into open and integration-capable systems for all future-oriented automation solutions.

A SCADA system and master control computer software package provides you with a tool which does not force you to stop the running process in the event of changes in visualisation and operation. You always remain online when doing this. And, as already outlined with the operatoing panels, it becomes an open element of your automation solution thanks to the diverse integration capabilities.
In the simplest case, integration is performed using the integrated serial ports, but can also be performed via:
• MODBUS
• ARCNET

Process visualisation

The advantages – the key to your success

ABB's system Advant Controller 31 stands for modern, future-oriented automation engineering. The transparency in systems engineering is reflected in the ease of handling of the devices and in uncomplicated configuration. This is achieved by the fact that ABB makes sure that it does not ignore aspects which have proven successful even when further-developing the system philosophy. Your AC31 advantages at a glance:

- Powerful processors and highly flexible I/O technology allow the new programmable controllers to be used in virtually any application.
- The configuration tool, developed in accordance with IEC 61131-3, with its extensive functionalities reduces configuration effort over and over again.
- The CS31 system bus, a system which has proven successful for many years now, guarantees optimum and reliable integration of local intelligence and peripheral devices.
- Bus repeaters make it possible to span even large distances. An additional, redundant or ring structure enhances reliability of the transmission medium.
- Peripheral devices with high packing density or as a finely graded, expansible variant provide maximum possible flexibility. This is assisted, not least, by the digital and analogue input/output devices with freely selectable and configurable signal specifications.
- Advant Controller 31 provides powerful and system-open communication levels for integration in overall processes.
- Diverse transmission media – conventional copper, convenient and particularly reliable fibre-optics or modem – ensure that you can make the right choice for any requirement.
- Advant Controller 31 even allows redundant bus topologies.
- A broad range of devices for display, operation and process visualisation, such as the Wizcon visualisation package, opens up new roads into the future.

Advant Controller 31 approvals

CSA, Canada

UL, USA

GL, Germany

DNV, Norway

BV, France

RINa, Italy

LRS, Great Britain

On the safe side

The safety-related Advant Controller 31-S automation system, certified by the German Technical Inspection Authority (TÜV), is available for safety-related applications. It is based on the time-proven system structure of the “classic” AC31 variant. Internally redundant I/O devices, developed specifically for safety-related applications, communicate via the AC31 Safety Field Bus with the safety-related CPU. Extending AC31-S with standard AC31 I/O devices on the same field bus allows low-cost conversion of operating and safety functions in one CPU. AC31-S is approved for safety-applications up to requirement class 4 and machine category 3.

Numerous approvals for AC31 allow export of components and systems through to machines and installations. Even applications in the marine and shipbuilding sector are approved fields of application for the reliable technology of Advant Controller 31.

Quality and the environment

Quality is the supreme principle of the Advant Controller 31. A certified quality management system to DIN ISO 9001 creates an important basis for this:

“Our thinking and actions are aimed at meeting the needs and wishes of our customers. Our customers decide on the quality of our products and services. It is they who assess the quality”. (Excerpt from: ABB Quality Manual)

Ambitious goals for ongoing improvement of all business processes are defined within the framework of the Total Quality System Review which is conducted at ABB STOTZ-KONTAKT GmbH at regular intervals.

The environmental impact of a product is determined very essentially by the design targets. Consequently, special attention is paid to gentle use of resources, avoidance of problematic materials, recyclable design and longevity of products as early as the stage at which the Performance Specifications are elaborated.

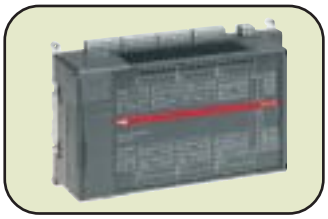
Advant Controller 31

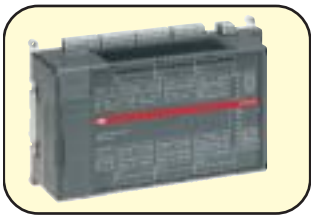
Summary

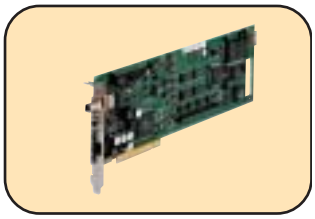
CPUs

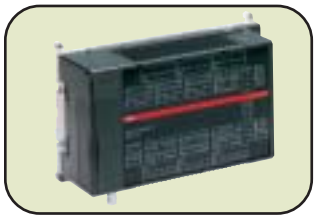
AC31

Details	07 CT/CR 41 07 CT/CR 42	07 KT/KR 51	07 KT 95
CS31 system bus	No	Yes	Yes
Program memory Size Memory	 34 kByte Flash EPROM and RAM	 34 kByte Flash EPROM and RAM	 480 kByte Flash EPROM and RAM
Plug-in memory			Smart Media Card (Flash, 2 MByte). For data storage and and for the reload of controller-program
Power Supply	24V DC/120V AC/230V AC	24V DC/120V AC/230V AC	24V DC
Dimensions (W x H x D) in mm	120x93x84	120x93x84	240x140x85
Serial Ports	1	2	2
Number of inputs and outputs Integrated DI/DO DI/DO maximum Integrated AI/AO AI/AO maximum	 8 DI and 6 DO 110 overall 3 AI on 07 CR/CT 42 48 AI/12 AO	 8 DI and 6 DO >1000 overall - 544 AI/136 AO	 12 DI and 8 DO 1012 overall 4 AI and 2 AO 228 AI/226 AO
Data puffering (selectable)	Accumulator	Accumulator	Replaceable battery
Real-time clock	Yes	Yes	Yes
Programming system	907 AC 1131	907 AC 1131	907 AC 1131
Programming interface	COM 1	COM 1	COM 1 or COM 2
Program execution	time and priority driven tasks	time and priority driven tasks	time and priority driven tasks
Subroutines	yes (12)	yes (12)	any
User program protection	Password	Password	Password
Addressable range Flags (Bit) Words (16 Bit) Double Words (32 Bit) Globale und local variables	 2016 2016 128 -	 2016 2016 128 -	 8192 8192 1024 256 kB
Timers	Unlimited	Unlimited	Unlimited
Counters High-Speed Counters (digital in- and outputs used as counter inputs)	Unlimited 1 (5kHz) or 2 (7kHz) with sensor-input	Unlimited 1 (5kHz) or 2 (7kHz) with sensor-input	Unlimited 1 to 2 (different operating modes, max. 50 kHz)
Special functions	Protocols: MODBUS, Controllers ASCII-communication PI and PID Controllers 32 bit arithmetic	Protocols: MODBUS, Controllers ASCII-communication PI and PID Controllers 32 bit arithmetic	Protocols: MODBUS, RCOM, AF100 PI and PID Controllers 32 Bit arithmetic
Connections	Detachable terminal blocks with screw-type terminals or snap-on clamps	Detachable terminal blocks with screw-type terminals or snap-on clamps	Detachable terminal blocks with screw-type terminals
Mounting	With and without top-hat rail	With and without top-hat rail	With and without top-hat rail









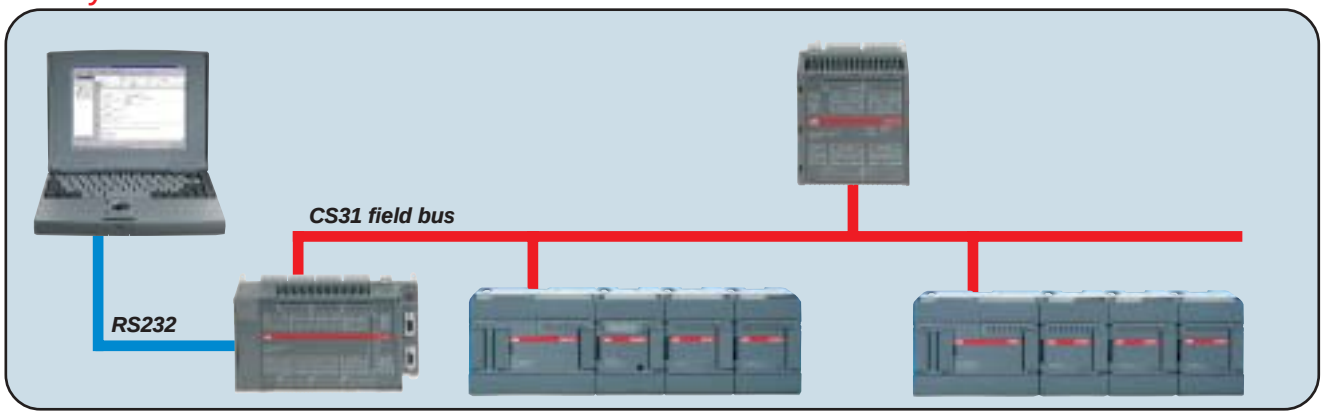
07 KT 96	07 KT 97	07 SL 97	07 KT 98
Yes	Yes	Yes	Yes
480 kByte Flash EPROM and RAM	480 kByte Flash EPROM and RAM	480 kByte Flash EPROM und RAM	1000 kByte Flash EPROM und RAM
Smart Media Card (Flash, 2 MByte) For data storage and and for the reload of controller-program	Smart Media Card (Flash, 2 MByte) For data storage and and for the reload of controller-program	Smart Media Card (Flash) For data storage and and for the reload of controller-program	Smart Media Card (Flash) For data storage and and for the reload of controller-program
24V DC	24V DC	24V DC	24V DC
240x140x85	240x140x85	Fullsize PCI-Karte	240x140x85
2	2	1	2
24 DI and 16 DO 1032 overall - 224 AI/224 AO	24 DI, 16 DO and 8 DC 1024 overall 8 AI and 4 AO 232 AI/228 AO	- 992 overall - 224 AI/224 AO	24 DI, 16 DO und 8 DC 1040 overall 8 AI und 4 AO 232 AI/224 AO
Replaceable battery	Replaceable battery	Replaceable battery	Replaceable battery
Yes	Yes	Yes	Yes
907 AC 1131	907 AC 1131	907 AC 1131	907 AC 1131
COM 1 or COM 2	COM 1 or COM 2 or optional ARCNET	COM 1 or ARCNET	COM 1/2 or ARCNET
time and priority driven tasks	time and priority driven tasks	time and priority driven tasks	time and priority driven tasks
any	any	any	any
Password	Password	Password	Password
8192 8192 1024 256 kB	8192 8192 1024 256 kB	8192 8192 1024 256 kB	8192 8192 1024 1 MB
Unlimited	Unlimited	Unlimited	Unlimited
Unlimited 1 to 2 (different operating modes, max. 50 kHz)	Unlimited 1 to 2 (different operating modes, max. 50 kHz)	Unlimited	Unlimited 1 to 2 (different operating modes, max. 50 kHz)
Protocols: MODBUS, RCOM, AF100 PI and PID Controller 32 Bit arithmetic	Protocols: ARCNET, MODBUS Profibus DP, RCOM, AF100 PI and PID Controller 32 Bit arithmetic	Protocols: ARCNET, MODBUS, Profibus DP, DeviceNet KP, PI- and PID-Controller, 32 Bit arithmetic, ASCII-communication	Protocols: ARCNET, MODBUS, Profibus DP, RCOM, AF100*, PI-/PID-Controller 32 Bit arithmetic, ASCII-communication Floating point arithmetic *in preparation
Detachable terminal blocks with screw-type terminals	Detachable terminal blocks with screw-type terminals		Detachable terminal blocks with screw-type terminals
With and without top-hat rail	With and without top-hat rail	in the PCI-Slot (fullsize)	With and without top-hat rail

AC31 – Technical Features

General system data

Operating conditions	Operating temperature	0 °C to + 55 °C
	Storage temperature	– 25 °C to + 75 °C
	Transport temperature	– 25 °C to + 75 °C
	Relative humidity, no condensation	50...95%
	Atmospheric pressure, operation	≥ 800 hPa ≥ 2000m
Mechanical data	Enclosure	IP 20
	Housing	to UL 94
	Vibration resistance	to IEC 68-2-6: 1g (Series 40/50), 4g (Series 90)
	Shock resistance	to IEC 68-2-27
Power supply	24 V DC	19.2 … 30 V DC (– 15 % … + 20 %)
Air gaps and creepage distances		IEC 664 und DIN VDE 0160
Insulation test		IEC 1131-2
Electromagnetic compatibility	Electrostatic discharge	IEC 1000-4-2 (Level 3)
	Radiated electromagnetic fields	
	Immunity tests	IEC 1000-4-3 (Level 3)
	Transient noise voltages (burst)	IEC 1000-4-4
	Capacitance immunity	IEC 1000-4-5
	Radio-frequency noise power	IEC 1000-4-6

Bus system



Communication	Serial
Interface specifications	RS 485 (shielded twisted pair)
Transmission speed	187.5 kbaud
Protocol	CS31 (Master Slave)
Transmission integrity check	CRC8
Number of AC31 devices on the bus	31 max.
Maximum length	500 m or 2000 m (with repeaters)
Bus redundancy	with bus repeater
Refresh time	2 ms min. oder 12 ms typical for 31 AC31 I/O devices on the bus

Programmable Controllers

Ordering Data

07 CR 41

Programmable Controllers Series 40

Expansible with 6 I/O devices, up to 110 I/O
Digital inputs 24 V DC - Digital outputs relay 250 V AC, 2 A / transistor 24 V DC, 0,5 A
serial port RS232 for programing and communication ASCII, MODBUS, analogue inputs, 12 bits,
2 +/- 10 V + 1 temperature measurement, input on 07 CR/CT 42, real-time clock

Integrated inputs	Integrated outputs	Program memory online changes with	without	Supply-voltage	Type	Order No.	Weight kg
8 D	6 relay	17 kb	34 kb	24 V DC	07 CR 41	1SBP 26 0020 R 1001	0,355
8 D	6 relay	17 kb	34 kb	120/230 V AC	07 CR 41	1SBP 26 0021 R 1001	0,800
8 D	6 transistor	17 kb	34 kb	24 V DC	07 CT 41	1SBP 26 0022 R 1001	0,355
8 D, 3 AI	6 relay	17 kb	34 kb	24 V DC	07 CR 42	1SBP 26 0023 R 1001	0,355
8 D, 3 AI	6 relay	17 kb	34 kb	120/230 V AC	07 CR 42	1SBP 26 0024 R 1001	0,800
8 D, 3 AI	6 transistor	17 kb	34 kb	24 V DC	07 CT 42	1SBP 26 0025 R 1001	0,355

07 KR 51

Programmable Controllers Series 50

Expansible with 6 I/O devices, distributed expansibility up to approx. 1000 I/O, integrated CS31 bus, switchable on MODBUS
Digital inputs 24 V DC - Digital outputs relay 250 V AC, 2 A / transistor 24 V DC, 0,5 A
serial port RS232 or RS485 for programming and communication ASCII, MODBUS
real-time clock

Integrated inputs	Integrated outputs	Program memory online changes with	without	Supply-voltage	Type	Order No.	Weight kg
8 digital	6 relay	17 kb	34 kb	24 V DC	07 KR 51	1SBP 26 0010 R 1001	0,355
8 digital	6 relay	17 kb	34 kb	120/230 V AC	07 KR 51	1SBP 26 0011 R 1001	0,800
8 digital	6 transistor	17 kb	34 kb	24 V DC	07 KT 51	1SBP 26 0012 R 1001	0,355

07 KT 97

Programmable Controllers Series 90

Distributed expansibility up to approx. 1000 I/O, with RAM and FLASH-EPROM
real-time clock, interface to CS31 field bus, online program modification, bit and word processing, electrically isolated;
digital inputs 24 V DC, digital outputs transistor (T) 24 V DC, 0,5 A; analogue inputs, resolution 12 Bit
0...10 V, 0...5 V and 0...20 mA on 07 KT 95, +/- 10 V, 0...20 mA, 4...20 mA, +/-5 V, -50 °C...+400 °C and -30 °C...+70 °C on 07 KT 97/98 (can also be used as digital I/O);
analogue outputs, resolution12 Bit, +/-10 V on 07 KT 95,
+/-10 V, 0...20 mA and 4...20 mA on 07 KT 97/98 (I/O number 07 KT 98 identical with 07 KT 97).
Power Supply 24 V DC. 2 serial ports, both configurable for programming

Integrated inputs	Integrated outputs	Counter inputs	Program memory	Type	Order No.	Weight kg
12 DI, 4 AI	8 DO, T, 2 AO	2	480 kB	07 KT 95	GJR 525 2800 R 0100	1,3
24 DI	16 DO, T	2	480 kB	07 KT 96	GJR 525 2900 R 0100	1,3
24 DI, 8 DC, 8 AI	16 DO, T, 4 AO	2	480 kB	07 KT 97	GJR 525 3000 R 0100	1,3

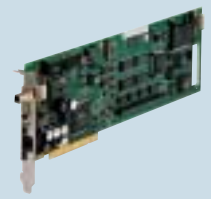
07 KT 98

Programmable Controllers Series 90 with integrated communication processors

Description	Type	Order No.	Weight, kg
07 KT 97 with ARCNET networking	07 KT 97-ARCNET	GJR 525 3000 R 0160	1,3
07 KT 97 with Profibus DP	07 KT 97-Profibus	GJR 525 3000 R 0120	1,3
07 KT 97 with ARCNET and Profibus DP	07 KT 97-ARCNET-Profibus	GJR 525 3000 R 0162	1,3
07 KT 98 with ARCNET	07 KT 98-ARCNET	GJR 525 3100 R 0160	1,3

Programmable Controllers, Input/output devices

Ordering data



07 SL 97

ICMK 14 F1

XI 16 E1

XM 06 B5

07 DC 92

Programmable Controller as PC-Card (PCI fullsize)

distributed expanibility up to approx. 1000 I/O, with RAM and FLASH-EPROM, real-time clock, interface to CS31 field bus, online program modification, bit and word processing, own power supply 24 V DC, 1 serial port, configurable for programming/communication, integrated ARCNET connection, PC operating system Windows NT. Optional Smart Media Card for data storage and backup of user defined controller program (ref. accessories).

Description	Program memory	Type	Order No.	Weight, kg
07 SL 97 with ARCNET networking	480 kB	07 SL 97-ARCNET	GJR 525 3400 R 0160	1,0
07 SL 97 with ARCNET and Profibus DP	480 kB	07 SL 97-ARCNET-Profibus	GJR 525 3400 R 0162	1,0
07 KT 97 with ARCNET and DeviceNet	480 kB	07 SL 97-ARCNET-DeviceNet	GJR 525 3400 R 0165	1,0

Expansible digital I/O bus modules (for Series 50 and 90)

Expansible with 6 I/O devices, up to approx. 100 I/O, (6 digital or 4 digital and 2 analogue)
Digital inputs 24 V DC - digital outputs relay 250 V AC, 2 A / transistor 24 V DC, 0.5 A
Integrated CS31 bus connection

Integrated inputs	Integrated outputs	Supply voltage	Type	Order No.	Weight kg
8 digital	6 relay	24 V DC	ICMK 14 F1	1SBP 26 0050 R 1001	0,355
8 digital	6 relay	120/230 V AC	ICMK 14 F1	1SBP 26 0051 R 1001	0,800
8 digital	6 transistor	24 V DC	ICMK 14 N1	1SBP 26 0052 R 1001	0,355

Digital I/O devices (for programmable controllers Series 40, 50 und I/O bus modules)

Power supply via programmable controllers and I/O bus modules

Integrated inputs and outputs	Type	Order No.	Weight kg
16 inputs 24 V DC	XI 16 E1	1SBP 26 0100 R 1001	0,220
16 outputs 24 V DC, 0.5 A transistor	XO 16 N1	1SBP 26 0105 R 1001	0,220
8 outputs 250 V AC, 2 A relay	XO 08 R1	1SBP 26 0101 R 1001	0,220
8 configurable inputs/outputs 24 V DC – 24 V DC, 0.5 A	XC 08 L1	1SBP 26 0102 R 1001	0,220
4 inputs 24 V DC and 4 outputs 250 V AC, 2 A relay	XK 08 F1	1SBP 26 0104 R 1001	0,220
8 outputs 24 V DC, 2 A transistor	XO 08 Y1	1SBP 26 0108 R 1001	0,220
8 outputs 250 V AC, 2 A (4 NO/NC + 4 NO) independent	XO 08 R2	1SBP 26 0109 R 1001	0,220
Display with 4 BCD coded characters (8 data)	XTC 08	1SBP 26 0107 R 1001	

Analogue I/O devices (for programmable controllers Series 40, 50 and I/O bus modules)

Power supply via programmable controllers and I/O bus modules

Integrated inputs and outputs	Type	Order No.	Weight kg
4 inputs, -/+ 10 V, -/+ 20 mA, 4...20 mA, Pt100, Pt1000, Ni1000, BALCO 500 2 outputs, -/+ 10 V, 0... 20 mA, 4...20 mA	XM 06 B5	1SBP 26 0103 R1001	0,220
8 inputs, -/+ 10 V, -/+ 20 mA, 4...20 mA, Pt100, Pt1000, Ni 1000, BALCO 500	XE 08 B5	1SBP 26 0106 R1001	0,220

Distributed digital I/O devices (for Series 50 und 90)

Supply voltage 24 V DC, integrated CS31 bus connection

Integrated inputs and outputs	Type	Order No.	Weight kg
32 inputs 24 V DC	07 DI 92	GJR 525 2400 R 0101	0,450
16 inputs, 8 outputs, 8 configurable inputs/outputs, 24 V DC, 0.5 A	07 DC 91	GJR 525 1400 R 0202	0,450
32 configurable inputs/outputs 24 V DC, 0.5 A	07 DC 92	GJR 525 2200 R 0101	0,450

Input/output devices, communication

Ordering data

07 AC 91

07 DO 93-I

07 KP 90

Distributed analogue I/O devices (for Series 50 und 90)

Supply voltage 24 V DC, integrated CS31 bus connection

Integrated inputs and outputs	Type	Order No.	Weight kg
8 inputs 12-bit, -/+ 50 mV, -/+ 500 mV, -/+ 10 V, 0...20 mA, 4...20 mA, Pt100, Pt1000, thermocouple	07 AI 91	GJR 525 1600 R 0202	0,450
16 configurable channels as input and output 1.) 16 channels can be set in pairs 0...10 V, 0...20 mA, 4...20 mA, 8-bit 2.) 8 inputs and 8 outputs, -/+ 10 V, 0...20 mA, 4...20 mA, 12-bit	07 AC 91	GJR 525 2300 R 0101	0,450

Distributed digital I/O devices (for Series 50 and 90) IP 67

Supply voltage 24 V DC, integrated CS31 bus connection

Integrated inputs and outputs	Type	Order No.	Weight kg
16 inputs 24 V DC	07 DI 93-I	GJV 307 5613 R 0202	0,470
8 outputs 24 V DC, 2 A transistor	07 DO 93-I	GJV 307 5611 R 0202	0,470
8 inputs and 4 outputs 24 V DC, 2 A transistor	07 DK 93-I	GJV 307 5623 R 0202	0,470

Communication processors, Series 90

Description	Supply voltage	*)	Type	Order No.	Weight kg
RCOM+ and RCOM protocol, Master/Slave for dedicated line and dial-up connection	24 V DC	A	07 KP 90	GJR 525 1000 R 0303	0,450
MODBUS protocol, 2 communication channels, Master and Slave operation Interfaces RS232/422/485	24 V DC		07 KP 93	GJR 525 3200 R 1161	0,450
AF100	24 V DC		07 KP 99	in preparation	0,450

*) A Special communication software required

Communication processors, Series 40 and 50

Description	Supply voltage	Type	Order No.	Weight kg
MODBUS protocol, 2 communication channels, Master and Slave operation Interfaces RS232/RS485 Synchronous or asynchronous communications	through basic unit	07 KP 53	1SBP 26 0162 R 1001	0,222

Operating panels

Ordering data

MT 45

MT 91

Operating panels ability class text

Lines/ Width (mm)	Characters/ height (mm)	Display-type	Fkt.-/alpha- and system keys/softkeys	Device driver/ interface	Type	Order No.	Weight per piece kg
2/82,5	20/18	LCD	4/8/-	upload/RS232	MT30	GATS 111 100 R 0001	0,45
8/71	20/40	LCD	8/23/-	upload/RS232	MT45*)	GATS 110 091 R 1001	0,45
8/71	20/40	LCD	8/23/-	upload/RS485	MT45*)	GATS 110 091 R 1201	0,45
8/71	20/40	LCD	8/23/-	upload/ARCNET	MT45*)	GATS 110 091 R 1401	0,45

*) MT45 is identical to MT40 as far as hardware and projecting are concerned

Operating panels ability class graphics

Lines/ width (mm)	Characters/ height (mm)	Display-type	Fkt.-/alpha- and system-keys/softkeys	Device driver/ interface	Type	Order No.	Weight per piece kg
8/240	40/64	LCD	16/23/8	upload/RS232	MT65*)	GATS 110 092 R 1001	0,75
8/240	40/64	LCD	16/23/8	upload/RS485	MT65*)	GATS 110 092 R 1201	0,75
8/240	40/64	LCD	16/23/8	upload/ARCNET	MT65*)	GATS 110 092 R 1401	0,75
—/120	—/64	VFD	16/23/8	upload/RS232	MT91	GATS 110 167 R 0001	0,75
—/120	—/64	VFD	16/23/8	upload/RS485	MT91	GATS 110 167 R 0201	0,75
—/120	—/64	VFD	16/23/8	upload/ARCNET	MT91	GATS 110 167 R 0401	0,75

*) MT65 is identical to MT60 as far as hardware and projecting are concerned

Operating panels

Ordering data

Programming cable

Operating panel	Type	Order No.	Weight per piece kg
MT30/45/65/91	VB30	GATS 110 094 R 0001	

Communications cable

Operating panel	Communications driver	CPU	Port type	CPU port	Type	Order No.	Weight per piece kg
MT30/45/60/65/91	AC31 AC31 MODBUS	Series90 07KP62 Series90	RS232 RS232 RS232	COM1 COM1 COM2	VB86	GATS 110 093 R 0011	
	T200	T200	RS232	PG-SS	VB43	GATS 110 093 R 0201	
	MODBUS	07KP93	RS232	COM3/4	VB58	1SAY 110 700 R 0001	
	AC31 MODBUS	Series50 Series50	RS232 RS232	COM1 COM1	VB67	1SAY 111 102 R 0001	

Cable for RS485 interface

Operating panel	Port type	Description	Type	Order No.	Weight per piece kg
MT45/65/91	RS485	open on CPU side	VB69	1SAY 111 103 R 0001	

Programming software for operating panels

Documentation is included in all versions of the programming software 935SPSPLUS

Operating panel	Drivers AC31/ T200/ MODBUS/ ARCNET included	Programming software	Type	Order No.	Weight per piece kg
MT30/45 MT65/91	yes	935SPSPLUS	WIN	GATS 110 095 R 0003	

Documentation

Manuals without software

Documentation	for	Language	Type	Order No.	Weight per piece kg
Projecting manual	SPSPLUS Win SPSPLUS Win	German English		GATS 111 104 R 0001 GATS 111 104 R 0002	
Device manual	MT30/40/45/60/65/91 MT30/40/45/60/65/91	German English		GATS 111 106 R 0001 GATS 111 106 R 0002	

Operating panels

Ordering data

TC 50

Operating panel TC50

Lines/ width (mm)	Characters/ height (mm)	Display type	Fkt.-/alpha- and system keys/Softkeys	Device driver/ interface	Type	Order No.	Weight per piece kg
2/73	20/11	LCD	5/7/-	MODBUS Master, AC31/RS232	TC50	1SBP 26 0150 R 1001	0,5
2/73	20/11	LCD	5/7/-	MODBUS Master, and Slave/RS232 and RS485	TC50-2	1SBP 26 0151 R 1001	0,5

Programming software

Programming software TCWIN includes programming cable for Windows 95/NT and quick start guide.

Operating panel	Programming software, cable included	driver included	Type	Order No.	Weight per piece kg
TC50	yes	MODBUS Master, AC31	TCWIN	1SBS 260 280 R 1001	

Programming cable

Cable for the conncection of the operating panel with a PC

Description	Connection with PC	Type	Order No.	Weight per piece kg
Programming cable	D-SUB 9pol. jack	07 SK 55	1SBN 260 205 R 1001	

Communications cable

Operating panel	Communications driver	CPU	CPU port	Type	Order No.	Weight per piece kg
TC50	AC31/MODBUS	Series 40..50	COM1	07 SK 54	1SBN 260 204 R 1001	
TC50	AC31/MODBUS	Series 30/90	COM1/2	07 SK 57	1SBN 260 207 R 1001	
TC50-2	MODBUS	Series 40..50	COM1	07 SK 58	1SBN 260 208 R 1001	

Documentation

Manuals without software

Documentation	for	Language	Type	Order No.	Weight per piece kg
Softwaremanual Hardwaremanual	TCWIN TC50	German		1SBC 0055 99 R 1201	
Softwaremanual Hardwaremanual	TCWIN TC50	English		1SBC 0055 99 R 1202	

Accessories

Ordering data

07 ST 50

Accessories for devices of Series 40…50

Description	Type	Order No.	Weight kg
2-tier terminal for easy connection of 3-wire sensors and actuators, 2 ea.	07 ST 50	1SBN 26 0300 R 1001	0,052
2-tier terminal for easy connection of analogue sensors, 2 ea.	07 ST 51	1SBN 26 0301 R 1001	0,052
2-tier spring-loaded terminal for easy connection of 3-wire sensors and actuators, 2 ea.	07 ST 52	1SBN 26 0302 R 1001	0,052
Spring-loaded terminal set for CPUs and bus modules	07 ST 54	1SBN 26 0311 R 1001	0,052
Spring-loaded terminal set for XI 16 E1	07 ST 55	1SBN 26 0312 R 1001	0,052
Spring-loaded terminal set for XO 08 R1 or XC 08 L1	07 ST 56	1SBN 26 0313 R 1001	0,052
Spring-loaded terminal set for XM 06 B5	07 ST 57	1SBN 26 0314 R 1001	0,052
Lables for labelling the I/O channels		1SBN 26 0310 R 1001	

Accessories for devices of Series 90

Description	*)	Type	Order No.	Weight kg
Programming cable, PC-Sub D25 connector	A	07 SK 90	GJR 525 0200 R 0001	0,220
Communication cable MODBUS/ASCII, PC-Sub D25 connector	A	07 SK 91	GJR 525 0300 R 0001	0,220
Smart Memory Card for 07 KT 95/96/97		07 MC 90	GJR 525 2600 R 0101	0,050
Battery for programmable controllers, Series 90		07 LE 90	GJR 525 0700 R 0001	0,200

*) A including adapter Sub D25/9

CS31 bus accessories

Description	Supply voltage	Type	Order No.	Weight kg
Repeater for CS31 bus Max. lenght 2000 m (3 repeaters)	24 V DC	NCB	FPR 347 1200 R 1002	0,340
Repeater for CS31 bus for redundant, ring or radial bus configuration	24 V DC	NCBR	FPR 347 1300 R 1002	0,340

Programming and test software

Programming and test software to IEC 61131-3 for 07 KT 95, 07 KT 96 and 07 KT 97 in FDB, LD, IL, SFC, ST Sampling-Trace, offline simulation, integrated visualisation, for Windows 95 and Windows NT on CD-ROM including documentation.

Description		Type	Order No.
Programming and test software	German	907 AC 1131	GJP 520 6900 R 0102
Programming and test software	English	907 AC 1131	GJP 520 7000 R 0102

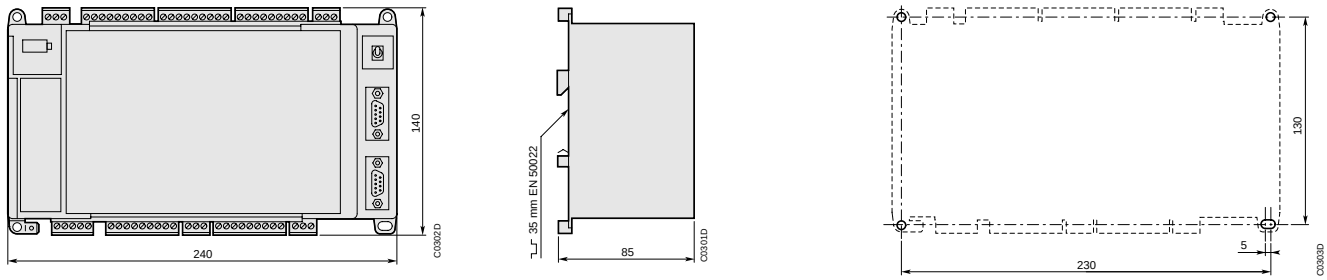
Documentation

Description		Type	Order No.
Documentation (without software) for 907 AC 1131	German		1SAC 1339 47 R 0101
	English		1SAC 1339 47 R 0201
Complete system description Configuration and operating instructions	German		1SAC 1316 99 R 0101
	English		1SAC 1316 99 R 0201

Dimension diagrams (dimensions in mm)

Series 40 and 50, CPUs and expansible distributed units

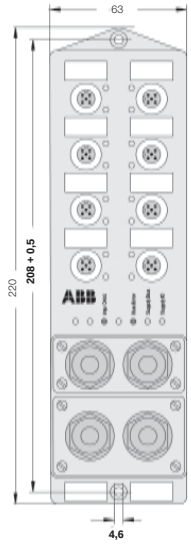
Series 40 and 50, expansions for CPUs or expansible distributed units



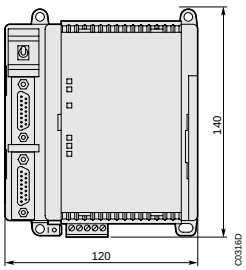
Series 90, CPUs

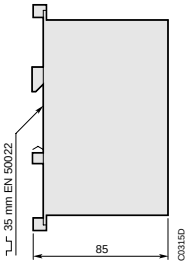
Series 90, distributed units

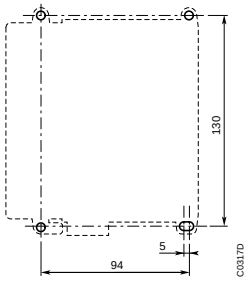
Dimension diagrams (dimensions in mm)



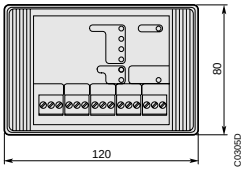
Series 90, distributed units with enclosure IP 67

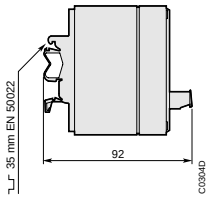




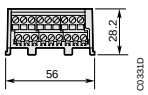


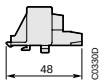
Series 90, communication processors





NCB/NCBR bus repeater





07 ST 50/51 connector

... should you still have any questions ...

... take advantage of the all-in ABB service. By telephone or fax from ABB staff at regional offices or via our hotline, including e-mail.

The Hotline team consists of experts who themselves configure and program and who can thus pass on their day-to-day practical product and application experience.

You can also receive immediate assistance via the Hotline by phone or modem, particularly also advice on programming.

But ABB will also be more than willing to help you in other questions or should you have other queries relating distributed automation. We organise seminars and training courses on this topic the whole year round in relation to specific tasks in automation of machinery and systems. On request, we can also train on site on your premises. Simply talk to your regional advisor.

Druckschrift Nr. 2 CDC 120001B0201 Printed in the Federal Republic of Germany (03.02 · 3 · GKD) subject to modification

ABB STOTZ-KONTAKT GmbH
P. O. Box 10 16 80
D-69006 Heidelberg
Telephone: ++49 62 21 / 701-0
Telefax: ++49 62 21 / 701-1115
http://www.abb.de/stotz-kontakt

ABB CONTROL
10, rue Ampère ZI B.P. 114
F-69685 Chassieu cedex / France
Telephone: ++33 (0) 4 7222 1722
Telefax: ++33 (0) 4 7222 1935
http://www.abb.com/lowvoltage