

Automation System Advant Controller 31

Open for the Future!



ABB

Open for the Future! Advant Controller 31

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 Advant[®] Controller 31 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 the AC31 equipment family and existing know-how forms the basis for use of the new technology.



For warehousing



For process automation



At pumping stations

The time-proven system structure has been retained and additional functionalities have been added. These include, for instance, additional, cross-system communication levels.

New 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

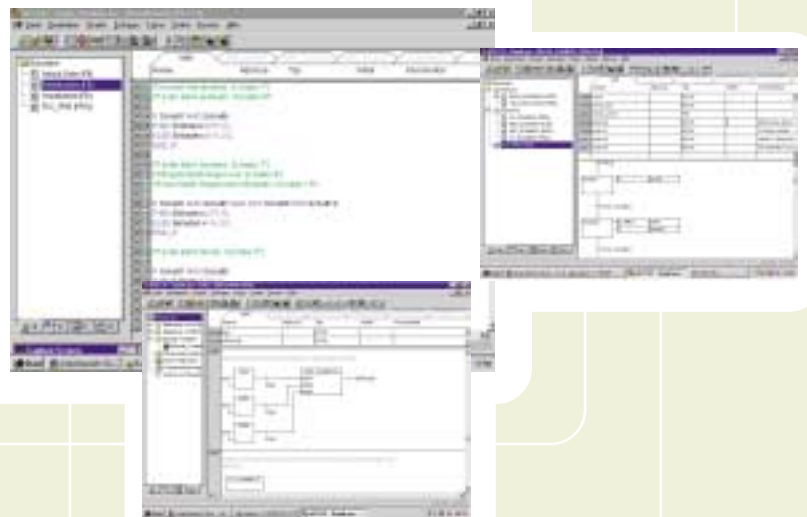
The open, manufacturer-independent programming standard to IEC 61131-3 for automation has been implemented in the 907 AC 1131 programming software. You can thus choose what configuration interface you wish to use when writing your application:

- 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 program, 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.

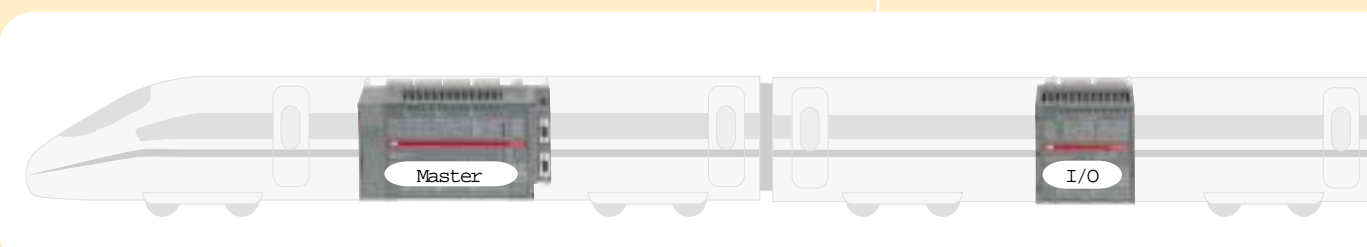
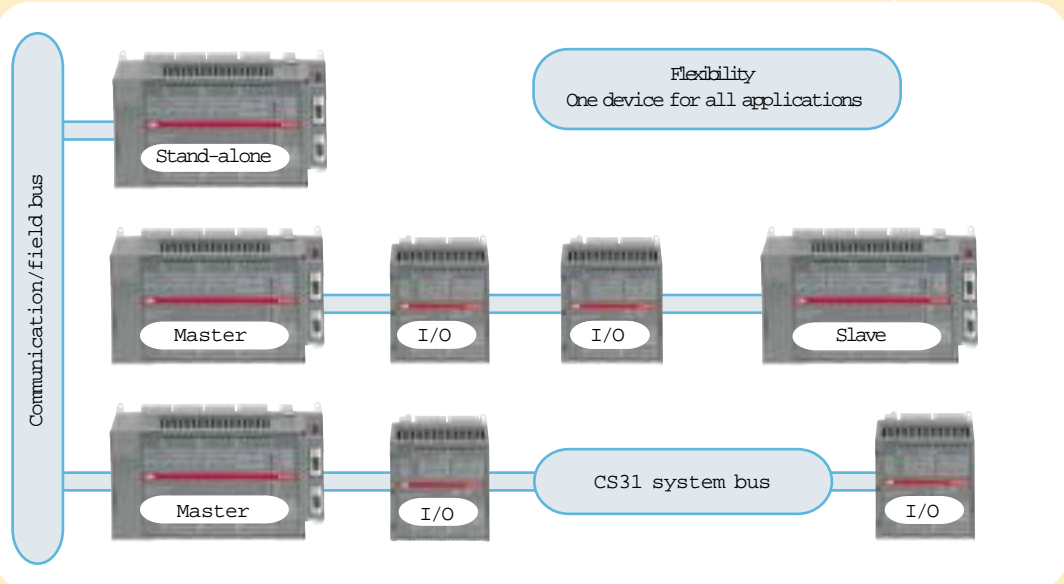
Integration

The new, 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/out-puts, Advant Controller 31 can be integrated easily in your auto-mation 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, expandable 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.

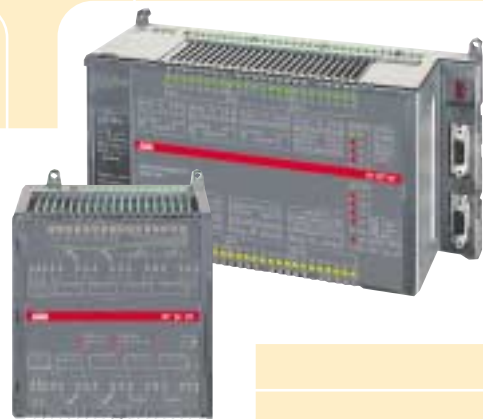
Well-conceived functionality

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 screws.



The compatible devices of Series 40...50



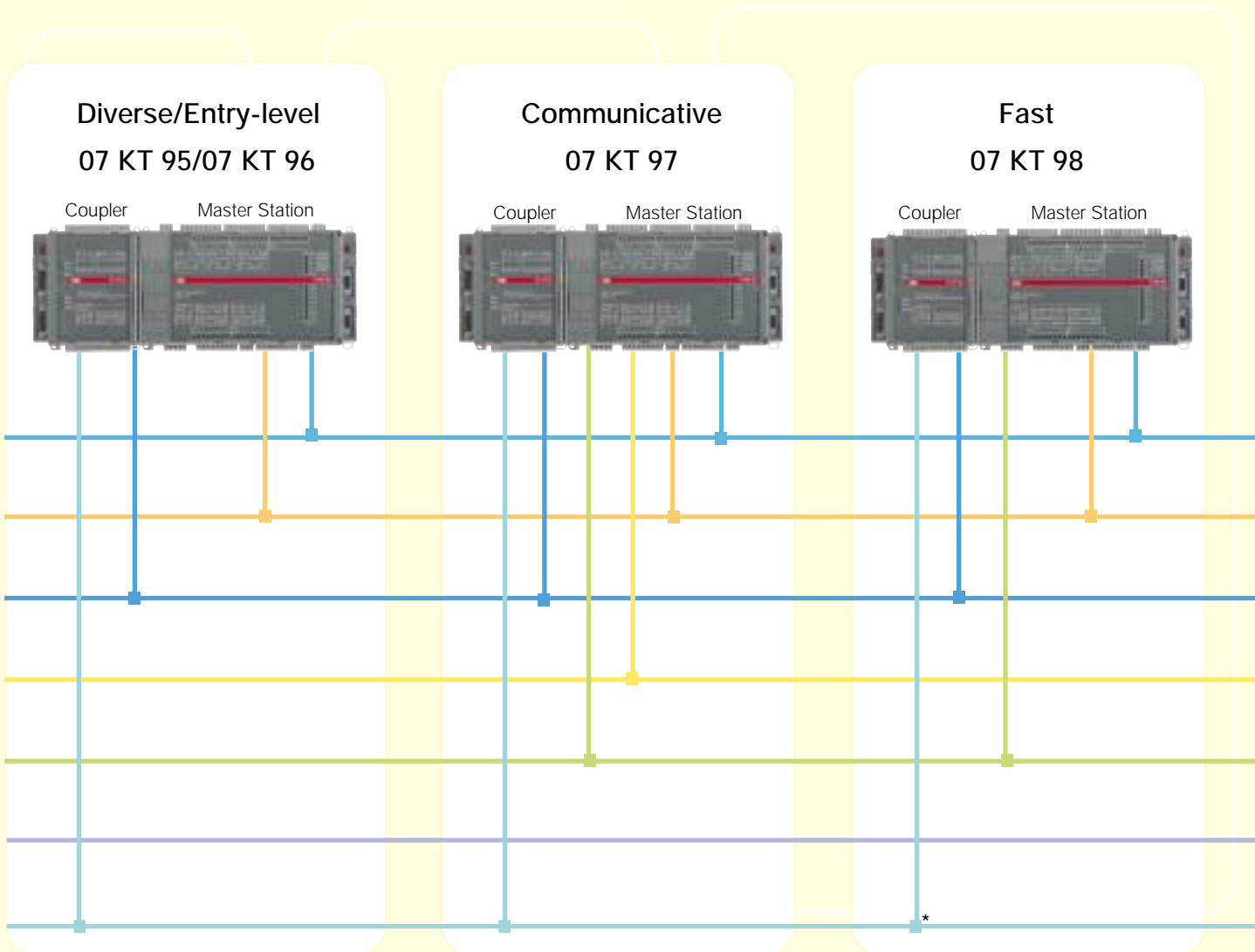
Communication – the key to understanding

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.

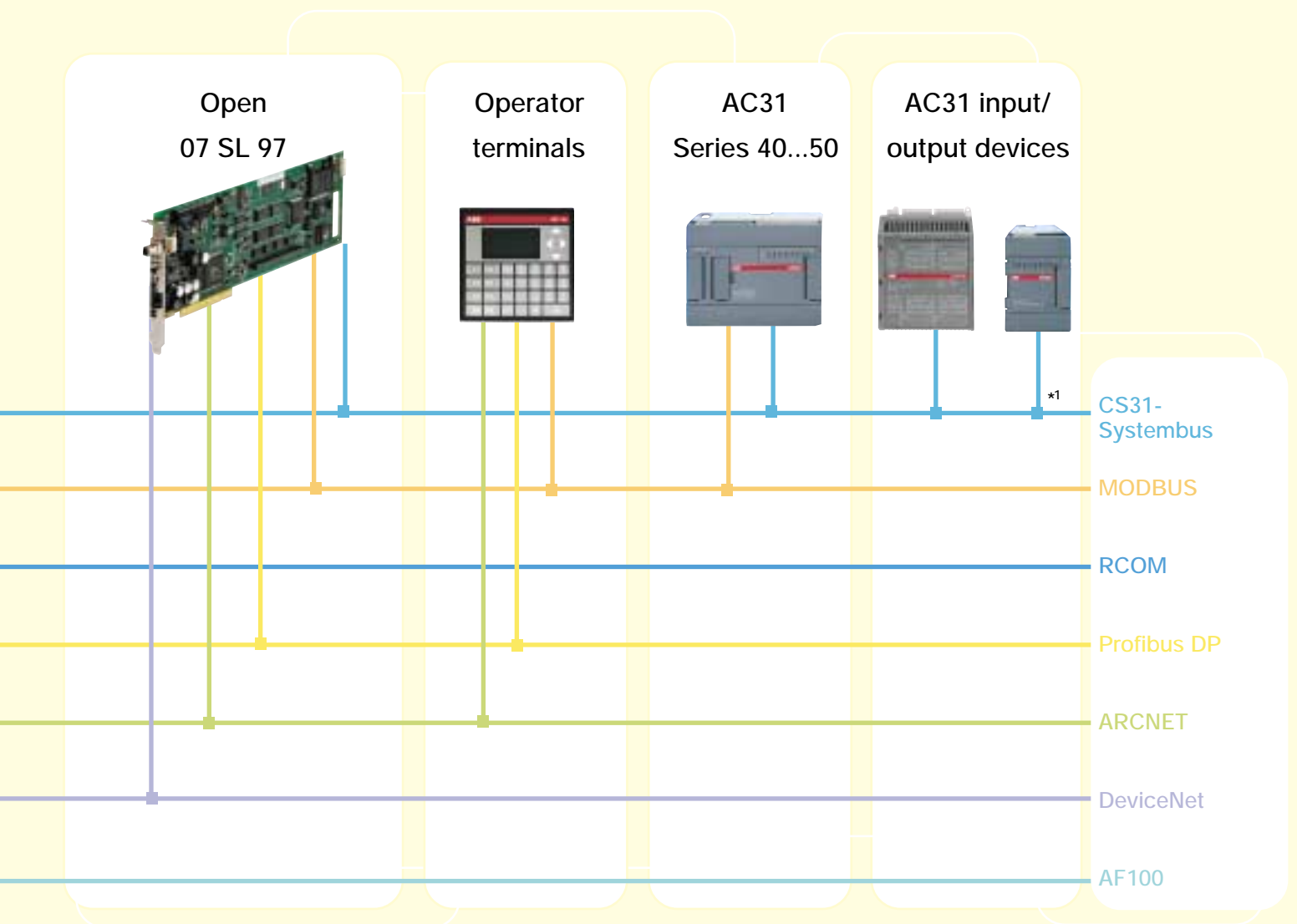
Profibus-DP allows Master and Slave communication in the field area. The open system structure of Advant Controller 31 ensures interfacing with automation systems of other manufactures and with intelligent front-end processing devices such as drives, actuators, operator terminals and sensor systems.



ARCNET – known as 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 manufacturers 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 operating 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, expandable 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



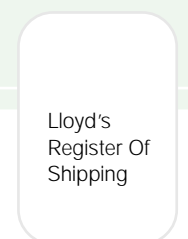
DNV, Norway



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

Technical features

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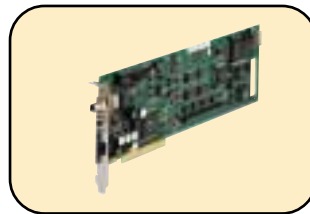
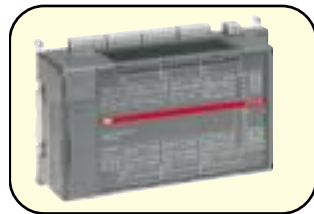
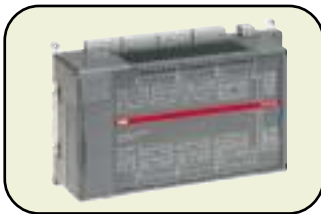
Technical data

| | |
|------------|----|
| Dimensions | 26 |
|------------|----|



CPUs

| AC31 |  |  |  |
|--|---|--|--|
| Details | 07 CT/CR 41 | 07 KT/KR 51 | 07 KT 95 |
| CS31 system bus | No | Yes | Yes |
| Program memory Size Memory | 32 kByte Flash EPROM and RAM | 32 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/230V AC | 24V DC/230V AC | 24V DC |
| Dimensions (W x H x D) in mm | 120x93x84 | 120x93x84 | 240x140x85 |
| Serial Ports | 1 | 1 | 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 - 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) | Replaceable battery | Replaceable battery | 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 | any | any | any |
| User program protection | Password | Password | Password |
| Addressable range Flags (Bit) Words (16 Bit) Double Words (32 Bit) | 2016 2016 64 | 2016 2016 64 | 8192 8192 1024 |
| Global and local variables | - | - | 256 kB |
| Timers | Unlimited | Unlimited | Unlimited |
| Counters | Unlimited | Unlimited | Unlimited |
| High-Speed Counters (digital in- and outputs used as counter inputs) | 1 (7kHz) or 2 (7kHz) with sensor-input | 1 (7kHz) or 2 (7kHz) with sensor-input | 1 to 2 (different operating modes, max. 50 kHz) |
| Special functions | Protocols: MODBUS, Controllers ASCII-communication | Protocols: MODBUS, Controllers ASCII-communication | Protocols such as MODBUS, RCOM, AF100 PI und 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 |
| Yes |
| 480 kByte Flash EPROM and RAM |
| Smart Media Card (Flash, 2 MByte) For data storage and and for the reload of controller-program |
| 24V DC |
| 240x140x85 |
| 2 |
| 24 DI and 16 DO 1032 overall - |
| 224 AI/224 AO |
| Replaceable battery |
| Yes |
| 907 AC 1131 |
| COM 1 or COM 2 |
| time and priority driven tasks |
| any |
| Password |
| 8192 |
| 8192 |
| 1024 |
| 256 kB |
| Unlimited |
| Unlimited |
| 1 to 2 (different operating modes, max. 50 kHz) |
| Protocols: MODBUS, RCOM, AF100 PI and PID Controller 32 Bit arithmetic |
| Detachable terminal blocks with screw-type terminals |
| With and without top-hat rail |

| |
|--|
| 07 KT 97 |
| Yes |
| 480 kByte Flash EPROM and RAM |
| Smart Media Card (Flash, 2 MByte) For data storage and and for the reload of controller-program |
| 24V DC |
| 240x140x85 |
| 2 |
| 24 DI, 16 DO and 8 DC 1024 overall 8 AI and 4 AO 232 AI/228 AO |
| Replaceable battery |
| Yes |
| 907 AC 1131 |
| COM 1 or COM 2 or optional ARCNET |
| time and priority driven tasks |
| any |
| Password |
| 8192 |
| 8192 |
| 1024 |
| 256 kB |
| Unlimited |
| Unlimited |
| 1 to 2 (different operating modes, max. 50 kHz) |
| Protocols: MODBUS RCOM and AF100, Profibus DP and ARCNET, PI and PID Controller 32 Bit arithmetic |
| Detachable terminal blocks with screw-type terminals |
| With and without top-hat rail |

| |
|--|
| 07 SL 97 |
| Yes |
| 480 kByte Flash EPROM und RAM |
| Smart Media Card (Flash) For data storage and and for the reload of controller-program |
| 24V DC |
| Fullsize PCI-Karte |
| 1 |
| - 992 overall - |
| 224 AI/224 AO |
| Replaceable battery |
| Yes |
| 907 AC 1131 |
| COM 1 or ARCNET |
| time and priority driven tasks |
| any |
| Password |
| 8192 |
| 8192 |
| 1024 |
| 256 kB |
| Unlimited |
| Unlimited |
| Protocols: ARCNET, integrated MODBUS , Profibus DP or DeviceNet as opt. KP, PI- and PID-Controller, 32 Bit arithmetic, ASCII- communication |
| in the PCI-Slot (fullsize) |

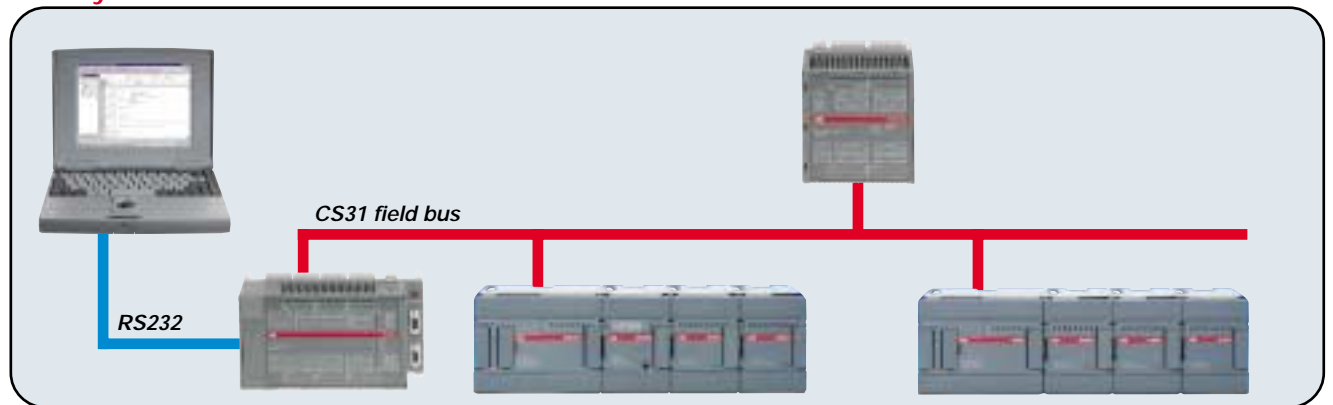
| |
|---|
| 07 KT 98 |
| Yes |
| 1000 kByte Flash EPROM und RAM |
| Smart Media Card (Flash) For data storage and and for the reload of controller-program |
| 24V DC |
| 240x140x85 |
| 2 |
| 24 DI, 16 DO und 8 DC 1040 overall 8 AI und 4 AO 232 AI/224 AO |
| Replaceable battery |
| Yes |
| 907 AC 1131 |
| COM 1/2 or ARCNET |
| time and priority driven tasks |
| any |
| Password |
| 8192 |
| 8192 |
| 1024 |
| 1 MB |
| Unlimited |
| Unlimited |
| 1 to 2 (different operating modes, max. 50 kHz) |
| Protocols: ARCNET, MODBUS, AF100* PI- and PID-Controller 32 Bit arithmetic, ASCII-communication Floating point arithmetic *in preparation |
| Detachable terminal blocks with screw-type terminals |
| 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 Contollers 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

| Integrated inputs | Integrated outputs | Program memory online changes | | Supply-voltage | Type | Order No. | Weight kg |
|-------------------|--------------------|-------------------------------|---------|----------------|----------|---------------------|-----------|
| | | with | without | | | | |
| 8 digital | 6 relay | 16 kb | 32 kb | 24 V DC | 07 CR 41 | 1SBP 26 0020 R 1001 | 0,355 |
| 8 digital | 6 relay | 16 kb | 32 kb | 120/230 V AC | 07 CR 41 | 1SBP 26 0021 R 1001 | 0,800 |
| 8 digital | 6 transistor | 16 kb | 32 kb | 24 V DC | 07 CT 41 | 1SBP 26 0022 R 1001 | 0,355 |



07 KR 51

Programmable Contollers Series 50

Expansible with 6 I/O devices, distributed expansibility up to approx. 1000 I/O, integrated CS31 bus
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 | | Supply-voltage | Type | Order No. | Weight kg |
|-------------------|--------------------|-------------------------------|---------|----------------|----------|---------------------|-----------|
| | | with | without | | | | |
| 8 digital | 6 relay | 16 kb | 32 kb | 24 V DC | 07 KR 51 | 1SBP 26 0010 R 1001 | 0,355 |
| 8 digital | 6 relay | 16 kb | 32 kb | 120/230 V AC | 07 KR 51 | 1SBP 26 0011 R 1001 | 0,800 |
| 8 digital | 6 transistor | 16 kb | 32 kb | 24 V DC | 07 KT 51 | 1SBP 26 0012 R 1001 | 0,355 |

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, resolution 12 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 97/98 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 |

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 |

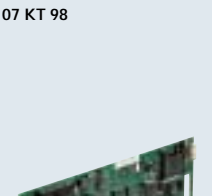
Programmable Contoller as PC-Card (PCI fullsize)

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, 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).

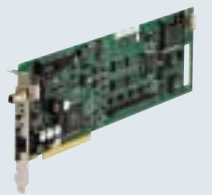
| Description | Program memory | Type | Order No. | Weight, kg |
|--------------------------------------|----------------|---------------------------|---------------------|------------|
| 07 SL 97 with ARCNET networking | 480 kB | 07 SL 97-ARCNET | GJR 525 3400 R 0160 | 1,0 |
| 07 SL 97 with ARCNET and 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 |



07 KT 97



07 KT 98



07 SL 97

Input/output devices

Ordering data



ICMK 14 F1

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 R1001 | 0,355 |
| 8 digital | 6 relay | 120/230 V AC | ICMK 14 F1 | 1SBP 26 0051 R1001 | 0,800 |
| 8 digital | 6 transistor | 24 V DC | ICMK 14 N1 | 1SBP 26 0052 R1001 | 0,355 |



XI 16 E1

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 R1001 | 0,220 |
| 16 outputs 24 V DC, 0.5 A transistor | XO 16 N1 | 1SBP 26 0105 R1001 | 0,220 |
| 8 outputs 250 V AC, 2 A relay | XO 08 R1 | 1SBP 26 0101 R1001 | 0,220 |
| 8 configurable inputs/outputs 24 V DC – 24 V DC, 0.5 A | XC 08 L1 | 1SBP 26 0102 R1001 | 0,220 |
| 4 inputs 24 V DC and 4 outputs 250 V AC, 2 A relay | XK 08 F1 | 1SBP 26 0104 R1001 | 0,220 |



XM 06 B5

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 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 | XE 08 B5 | 1SBP 26 0106 R1001 | 0,220 |



07 DC 92

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 R0101 | 0,450 |
| 16 inputs, 8 outputs, 8 configurable inputs/outputs, 24 V DC, 0.5 A | 07 DC 91 | GJR 525 1400 R0202 | 0,450 |
| 32 configurable inputs/outputs 24 V DC, 0.5 A | 07 DC 92 | GJR 525 2200 R0101 | 0,450 |



07 AC 91

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 R0202 | 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 R0101 | 0,450 |

Input/output devices, communication

Ordering data



07 DO 93-I



07 KP 90

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

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 | Series90 | RS232 | COM1 | VB86 | GATS 110 093 R 0011 | |
| | AC31 MODBUS | 07KP62 Series90 | RS232 RS232 | COM1 COM2 | | | |
| | T200 | T200 | RS232 | PG-SS | VB43 | GATS 110 093 R 0201 | |
| | MODBUS | 07KP93 | RS232 | COM3/4 | VB58 | 1SAY 110 700 R 0001 | |
| | AC31 | Series50 | RS232 | COM1 | VB67 | 1SAY 111 102 R 0001 | |
| | MODBUS | Series50 | RS232 | COM1 | | | |

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 | German | | GATS 111 104 R 0001 | |
| | SPSPLUS Win | English | | GATS 111 104 R 0002 | |
| Device manual | MT30/40/45/60/65/91 | German | | GATS 111 106 R 0001 | |
| | MT30/40/45/60/65/91 | English | | 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 connection 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 |
| Labels 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. length 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

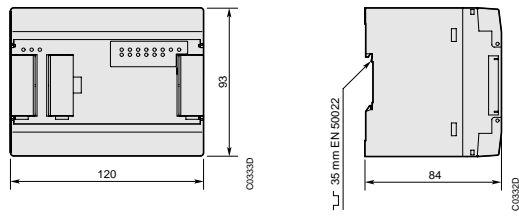
Programming and test software to IEC 61131-3 for 07 KT 95, 07 KT 96 and 07 KT 97 in FDB, LD, IL, SFC, ST Sampling-Trace, offline simulation, integrated visualisation, for Windows 95 and Windows NT on CD-ROM including documentation.

| 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 |

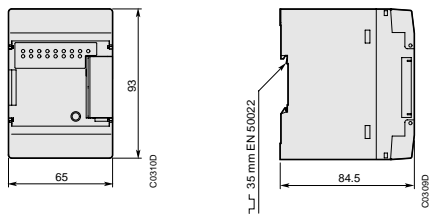
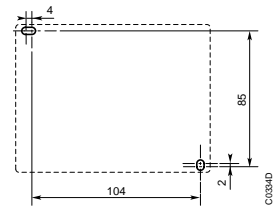
Documentation

| 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 |

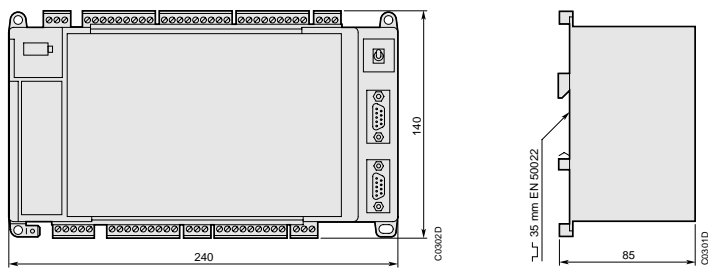
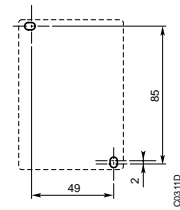
Dimension diagrams (dimensions in mm)



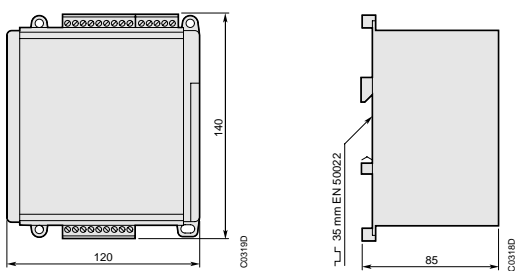
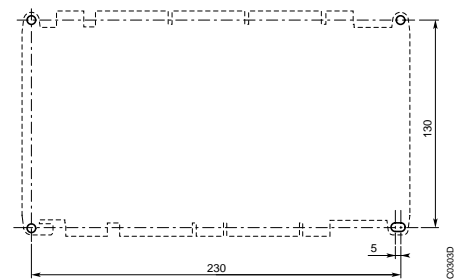
Series 40 and 50, CPUs and expandable distributed units



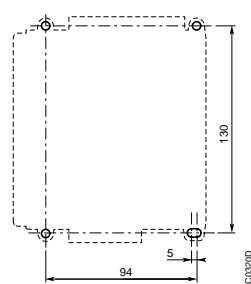
Series 40 and 50, expansions for CPUs or expandable distributed units



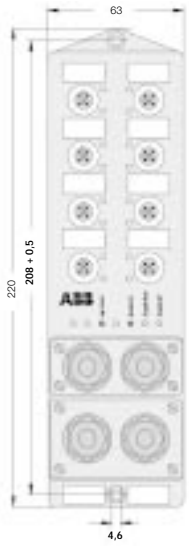
Series 90, CPUs



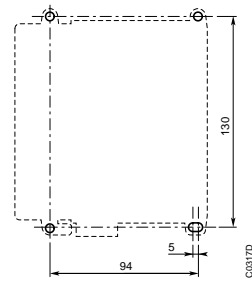
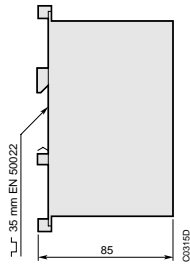
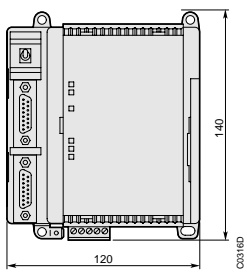
Series 90, distributed units



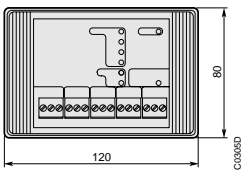
Dimension diagrams (dimensions in mm)



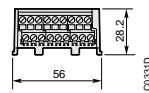
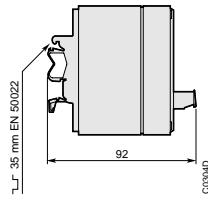
Series 90, distributed units with enclosure IP 67



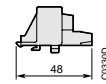
Series 90, communication processors



NCB/NCBR bus repeater



07 ST 50/51 connector



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

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ABB

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