

Product Guide



Features

- Attractive alarm system solution for small and large on/off input annunciator applications
- Centralized annunciator systems, distributed annunciator systems and mixed system
- Standardized, field-programmable off-the-shelf annunciator units
- Large variety of standard functions selectable to meet the requirements of various applications
- Serial interface and man-machine communication enabling local event reporting
- Extensive communication with superior systems via the serial interface and the SPA bus
- High immunity to electrical and electromagnetic interference
- Sophisticated hardware and software self-supervision system for maximum operational reliability even under the most demanding environmental conditions
- Powerful software support for parametrization of the annunciator units via the serial interface
- Member of the SPACOM product family, ABB's Distribution Automation system
- CE marking according to the EC directive for EMC

Application

The combined control data communicator and annunciator type SACO 148D4 constitutes the master unit of the coordinated substation secondary equipment system SPACOM. The communicator part of the equipment, i.e. SACO 100M, controls the flow of information between the SPACOM devices of a substation, power plant or other installations and a superior control, monitor-

ing or reporting system. The communicator can also control a printer or another output device for local event output. The annunciator part of the equipment handles the standard field contact supervision in the application concerned. If required, the annunciator part can be extended with the necessary number of SACO annunciator units to obtain the desired capacity of the system.

Design

The combined control data communicator and annunciator is composed of the following modules: a power supply module, a control module, three annunciator modules, three output modules and a connection module in a standard 19 inch subrack.

The communicator transfers information to and from the SPACOM units. This information may consist of set values, measured values, acknowledge and reset instructions, remote control commands, events with time tags, etc. The communicator sorts the incoming events in chronological order and attaches clear text information to the events before they are printed out or passed on to a hierarchically superior system, e.g. a remote control system.

The annunciator part of the equipment is used for supervision of alarm and signalling contacts in a power plant, substation or industrial plant, where a SPACOM system is used.

The annunciator part provides immediate fault recognition, fault identification as well as visual and audible alarm in an abnormal process situation. The annunciator part also provides a means for subsequent fault analyses which means that corrective measures can be carried out without delay and full control of the process can be maintained.

Each alarm annunciator module includes 16 alarm channels. The channels are activated by normally open or normally closed process contacts. The required 48 V dc contact circuit voltage is generated and supervised by the annunciator unit. Each channel can separately be assigned a start delay from 5 ms to 160 s.

On activation of a channel the visual indicator of the channels starts blinking. One of five standardized blinking systems according to ISA and DIN can be selected by the operator at commissioning. When several annunciator units are interconnected the total system works as a whole, which means that blinkings are synchronized, alarm signals from different subracks can be routed to the same group alarm output relay, etc.

Each annunciator module is provided with an event register, which stores the last nine events of the module in chronological order. The event register can be read via the serial interface.

The standard annunciator unit SACO 148D4 is provided with 12 output relays, of which 10 normally are used as group alarm output relays, one is used for the control of a buzzer and one as alarm output relay for the self-supervision system. If more output relays are needed an additional relay subrack type SACO 128R4 can be used. The maximum capacity of the relay subrack is 128 relays. If additional grouping possibilities are needed the alarm signals from the SACO 148D4 can be wired via a grouping unit type SACO 64C5.

The annunciator system can be extended as required. The maximum annunciator system has a capacity of 560 channels in one system and the resolution of the time marking is 10 milliseconds.

Data communication

The combined control data communicator and annunciator is equipped with two RS 232 interfaces. Alternatively, one of the RS 232 interfaces can be used as a 20 mA current loop. Further the equipment is provided with an RS 485 port, which is used as a SPA bus interface and a port called "opto" that is used as a SPA bus interface.

By means of a bus connection module type SPA-ZC 17/S, SPA-ZC 21/S or SPA-ZC 22 the device can be connected to the fibre-optic SPA bus. The bus connection module type SPA-ZC 21/S is powered from the host unit, whereas the bus connection module SPA-ZC 17/S is provided with a built-in power unit, which can be fed from an external secured power source. With the bus connection module type SPA-ZC 22 a maximum of five separate fibre-optic loops can be connected to the combined control data communicator and annunciator.

Self-supervision

The device incorporates a sophisticated self-supervision system which increases the availability of the device and the reliability of the system. The self-supervision system continuously monitors the hardware and the software of the unit. The system also supervises the operation of the auxiliary supply module and the level of the electronics' voltages generated by the module.

If a permanent fault is detected, the fault indicator on the front panel of the faulty module is lit, the output relay of the self-supervision system operates and the outputs are blocked.

Auxiliary supply voltage

The auxiliary supply of the device is obtained from an internal plug-in type power supply module. Two auxiliary power module types are available: type SWSM 220A48 with two

inputs, 19...70 V dc and 80...265 V ac/dc and type SWSM 220A220, also with two inputs, 80...265 V dc and 80...265 V ac/dc. The power supply module forms the internal voltages required by the device.

Technical data**Table 1: General**

Number of alarm channels (three annunciator modules)	48 on/off channels
Extension capacity	35 annunciator modules and 65 protection relay modules, or 100 protection relay modules
SPA bus connection	Plastic fibre, glass fibre or electric RS 485
Event scanning resolution	Better than 10 ms
Interfaces for output devices	2 × RS 232 or 1 × RS 232 and 1 × 20 mA current loop
Accuracy of real-time clock	2 s/day
Annunciator channel inputs	NO or NC field contact
Field contact voltage, generated by internal supply module	48 V dc ±20%
Loop current when field contact closed	4 mA, max. value
Selectable channel input and reset delays	5 ms, 20 ms (default), 100 ms, 1 s, 20 s, 60 s or 160 s. (Other values possible via the serial communication.)
Acknowledge, reset or other control input	NO contact
Acknowledge/reset inputs	Audible reset (silence) Channel acknowledge Channel reset Remote testing
Control inputs	Local Remote Time synchronization
Group alarm outputs	10 relays
Group alarm reflash outputs	16...48 relays (SACO 128R4)
Parallel lamp outputs	48 relays (SACO 128R4)
Field contact follower outputs	48 relays (SACO 128R4)
Audible device output	1 relay
Self-supervision output	1 relay
Contact type	NO contact (default) NC contact (by soldering)
Rated contact voltage	250 V ac
Rated contact current	3 A
Breaking capacity at the circuit L/R ≤ 40 ms and 48V/110V/220V	1 A/0.25 A/0.15 A

Technical data (cont'd)

Table 2: Data communication

Transmission mode		Fibre-optic serial bus
Coding		ASCII
Data transfer, selectable		4800 or 9600 Bd
Electrical/optical bus connection module, powered from the host unit	for plastic core cables	SPA-ZC 21BB/S
	for glass fibre cables	SPA-ZC 21MM/S
Electrical/optical bus connection module, powered from the host unit or from an external power source	for plastic core cables	SPA-ZC 17BB/S
	for glass fibre cables	SPA-ZC 17MM/S
Electrical/optical bus connection module		SPA-ZC 22BB/MM combinations

Table 3: Auxiliary supply modules

Type of module	SWSM 220A48	Supply 1	19...70 V dc
		Supply 2	80...265 V ac/dc
	SWSM 220A220	Supply 1	80...265 V dc
		Supply 2	80...265 V ac/dc
Power consumption			~20 W

Table 4: Tests and standards

Test voltages	Between relay inputs and frame	
	Between relay outputs and frame	
	Between supply circuits and frame	
	Dielectric test voltage (IEC 60255-5)	2 kV, 50 Hz, 1 min
	Impulse test voltage (IEC 60255-5)	5 kV, 1.2/50 μ s, 0.5 J
Disturbance tests	High frequency test voltage (IEC 60255-6)	2.5 kV, 1 MHz
Environmental conditions	Service temperature range	-10...+55°C
	Storage temperature range	-40...+70°C
	Long term damp heat withstand (IEC 60068-2-3)	<95%, +40°C, 56 d/a
	Degree of protection by enclosure when panel-mounted	IP 40
	Weight	~8.1 kg

Block diagram

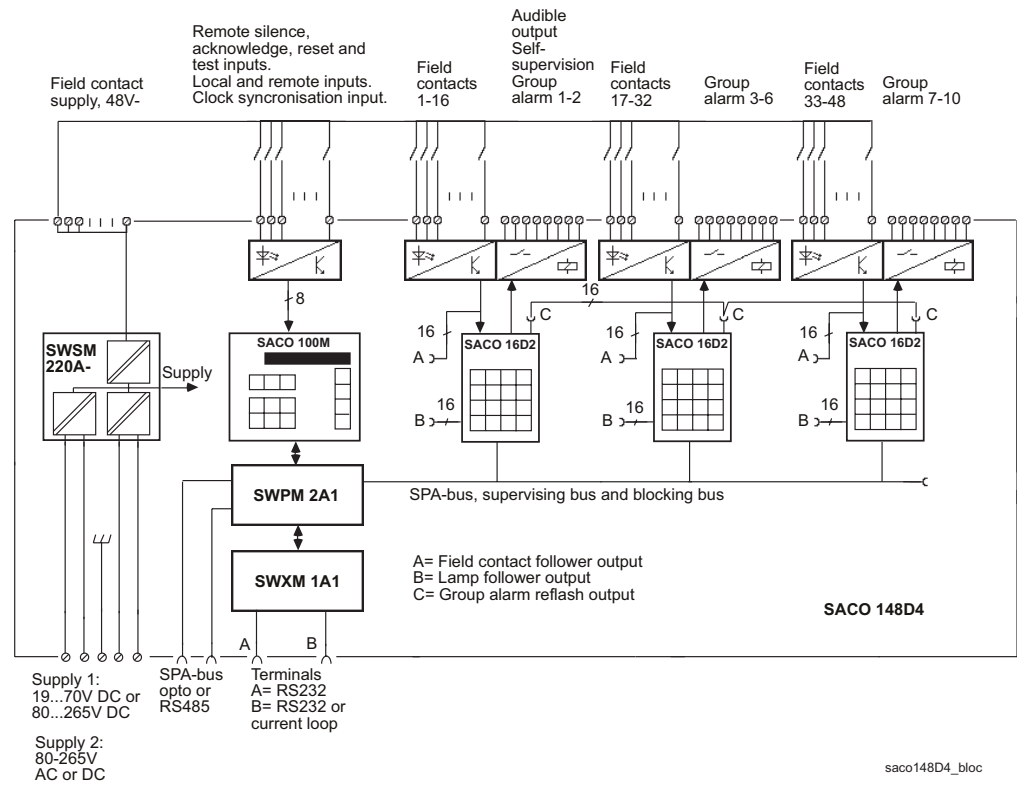


Fig. 1 Block diagram

saco148D4_bloc

Mounting and dimensions

19" subrack

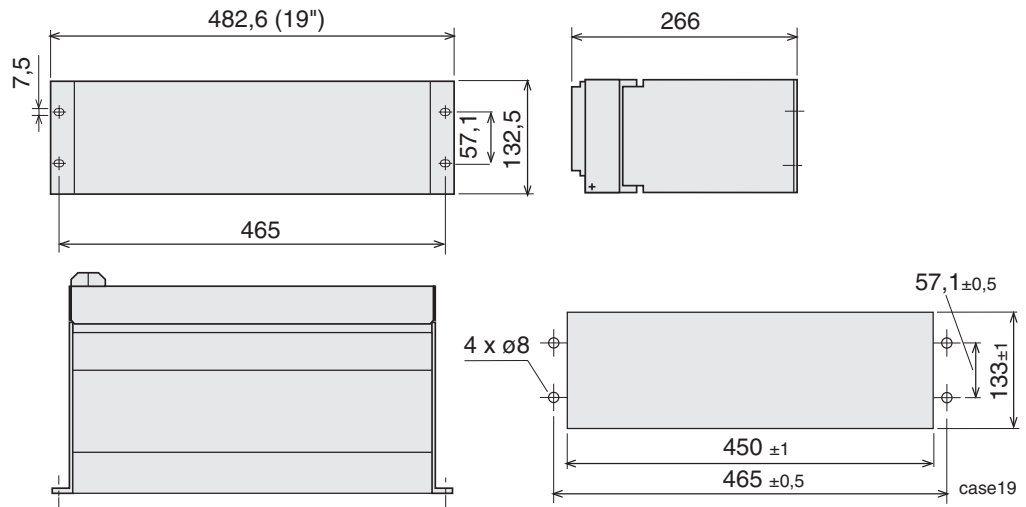


Fig. 2 Dimensions (in mm) and panel cut-out for flush mounting

Panel mounting

The annunciator can also be flush mounted in doors and panels. The relevant panel cut-out and drilling pattern for the fixing screws are illustrated above.

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Ordering

When ordering, please specify:

Ordering information	Ordering example
1. Type designation and quantity	SACO 148D4, 1 piece
2. Order number	RS 821 483-BA
3. Auxiliary voltages	$U_{aux1} = 110 \text{ V dc}$, $U_{aux2} = 220 \text{ V ac}$
4. Accessories	-
5. Special requirements	-

Order numbers

Control data communicator type SACO 148D4_	
Type SACO 148D4-0 incl. SACO 100M	RS 821 480-AA, -BA
Type SACO 148D4-1 incl. SACO 100M + 1 x SACO 16D2	RS 821 481-AA, -BA
Type SACO 148D4-2 incl. SACO 100M + 2 x SACO 16D2	RS 821 482-AA, -BA
Type SACO 148D4 incl. SACO 100M + 3 x SACO 16D2	RS 821 483-AA, -BA
The last two letters of the order number indicate the auxiliary voltage U_{aux} of the annunciator unit as follows:	AA equals supply 1 = 80...265 V dc, supply 2 = 80...265 V ac/dc
	BA equals supply 1 = 19...70 V dc, supply 2 = 80...265 V ac/dc

Accessories

Programming unit SACO 16PM	RS 891 071-AA
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Flat cables for routing the SPA bus between SACO subracks		
Cable type SWIR 24	For interconnection of 2 racks	RS 952 002-AA
Cable type SWIR 25	For interconnection of 3 racks	RS 952 002-BA
Cable type SWIR 26	For interconnection of 4 racks	RS 952 002-CA
Cable type SWIR 27	For interconnection of 5 racks	RS 952 002-DA
Cable type SWIR 28	For interconnection of 6 racks	RS 952 002-FA

Flat cables for contact follower signals from SACO annunciator subrack to grouping unit or relay subrack		
Cable type SWIR 31	Cable to nearby grouping unit	RS 952 004-AA
Cable type SWIR 35	Cable to nearby relay subrack	RS 952 004-BA
Cable type SWIR 36	Cable for jumping over one subrack	RS 952 004-CA
Cable type SWIR 37	Cable for jumping over two subracks	RS 952 004-DA
Cable type SWIR 49	Cable for jumping over three subracks	RS 952 004-FA

Flat cables for parallel lamp outputs from SACO subrack or grouping unit		
Cable type SWIR 30	Cable to nearby relay subrack or grouping unit	RS 952 003-AA
Cable type SWIR 50	Cable for jumping over one subrack	RS 952 003-BA
Cable type SWIR 51	Cable for jumping over two subracks	RS 952 003-CA
Cable type SWIR 52	Cable for jumping over three subracks	RS 952 003-DA

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Flat cables for grouped output signals from grouping unit to relay subrack		
Cable type SWIR 32	Cable to nearby relay subrack	RS 952 005-AA
Cable type SWIR 33	Cable for jumping over one subrack	RS 952 005-BA
Cable type SWIR 34	Cable for jumping over two subracks	RS 952 005-CA
Cable type SWIR 53	Cable for jumping over three subracks	RS 952 005-DA

References**Additional information**

User's manual "Control data communicator type SACO 148D4"	34 SACO148 1EN1
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