



Features

- Flexible, field-customizable 16-channel annunciator unit
- Alarm channels activated by normally open or normally closed contact
- Four four-output relays, i.e. two for group realarms, one for an audible device and one for the self-supervision system
- Parameter selection and adjustment from front panel or via serial interface
- First-out alarm indication with clear four-digit display on the front panel
- Extensive data communication via the serial interface and the SPA bus
- Sophisticated hardware and software self-supervision system for maximum operational reliability under the most demanding environmental conditions
- Powerful software support for parameterization of the unit via the serial interface
- Member of the SPACOM product family and ABB's Substation Automation system
- CE marking according to the EC directive for EMC

Application

The analog annunciator unit is used in a variety of applications requiring supervision of alarm and signalling contacts in power plants, substations and industrial process installations. The alarm unit is also approved for use in off-shore installations and marine applications. Further, the annunciator unit can be used in any application where on/off signals are to be supervised.

The annunciator unit provides immediate fault recognition, fault identification and visual and audible alarm in an abnormal process situation. The annunciator unit also pro-

vides 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.

The annunciator units can be used as independent stand-alone units, or they can be connected together via a fibre-optic bus to form complete supervision, event sequence reporting and data acquisition systems.

The annunciator unit is a member of SPACOM, the ultimate integrated secondary equipment system for power systems.

Design

The annunciator unit is composed of four modules: an alarm annunciator module, an input/output module, a connection module and a power module, housed in a rugged aluminium casing.

The 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.

The annunciator is provided with a first-out indication given via the four-digit alphanumeric display on the front panel. The first-out alarm is indicated with a letter A and the channel number.

The annunciator unit is also provided with an event register, which stores the last nine events in chronological order. The event register can be read via the push-buttons and the display on the front panel or via the serial interface.

The annunciator holds four output relays, two of which are used as group alarm output relays. One of four modes of operation can be selected for the rearm output relays.

One output relay is dedicated for the self-supervision system and one for the control of an audible device, such as a buzzer or a horn.

Any information generated in the annunciator unit can be read by a hierarchically superior system via the serial interface.

Data communication

The annunciator unit is provided with a serial interface on the rear panel. By means of a bus connection module type SPA-ZC 17/S or SPA-ZC 21/S the unit 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. The unit communicates with higher-level data acquisition and control systems over the SPA bus.

Self-supervision

The annunciator 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 is lit, the output relay of the self-supervision system operates and the outputs are blocked.

Auxiliary supply voltage

The auxiliary supply of the relay is obtained from an internal plug-in type power supply module. Two auxiliary power module types are available: type SPGU 240A1 for the supply voltage range 80...265 V ac/dc and type SPGU 48B2 for the supply voltage range 18...80 V dc. The power supply module forms the internal voltages required by the annunciator.

Technical data

Table 1: Alarm channels

Capacity	16 channels
Type of field contact or type of incoming alarm signal	Make contact (default) Break contact Rising edge Falling edge
Field contact voltage	48 V dc $\pm 20\%$
Loop current of closed field contact circuit	4 mA $\pm 20\%$
Channel input and reset delay time, field-selectable values	5 ms, 20 ms (default), 100 ms, 1 s, 5 s, 20 s, 60 s or 160 s

Table 2: External acknowledge/reset inputs

Channel acknowledge/reset	Make contact
Audible device reset	Make contact
The control voltages for the acknowledge/reset circuits are obtained from the internal supply	48 V dc $\pm 20\%$

Table 3: Reflash signal outputs

Reflash group alarm outputs	2 relays, NO contact (NC by soldering)
Audible device output	1 relay
Internal self-supervision output	1 relay
Rated contact current/breaking voltage	3 A/250 V ac/dc
Breaking capacity for dc currents when the load time-constant L/R ≤ 40 ms at the voltage levels 48/110/220 V dc	1 A/0.25 A/0.15 A

Table 4: 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

Table 5: Auxiliary supply modules

Type of module	SPGU 240A1	rated voltages U_n	110/120/230/240 V ac 110/125/220 V dc
		operative range	80...265 V ac/dc
	SPGU 48B2	rated voltages U_n	24/48/60 V ac
		operative range	18...80 V dc
	Power consumption under quiescent/operation conditions		~10 W/~25 W

Table 6: Tests and standards

Test voltages	- alarm and acknowledge/reset inputs to frame - output relay contacts to frame - auxiliary supply circuits to frame - inputs, outputs and supply circuits between themselves	
	Dielectric test voltage (IEC 60255-5)	2 kV, 50 Hz, 1 min
	Impulse test voltage (IEC 60255-5)	5 kV, 1.2/50 μs, 0.5 J
Disturbance tests	HF test voltage (IEC 60255-6)	2.5 kV, 1 MHz
Environmental conditions	Ambient service temperature range	-10...+55°C
	Ambient transport and 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 54
	Weight	~4.5 kg

Block diagram

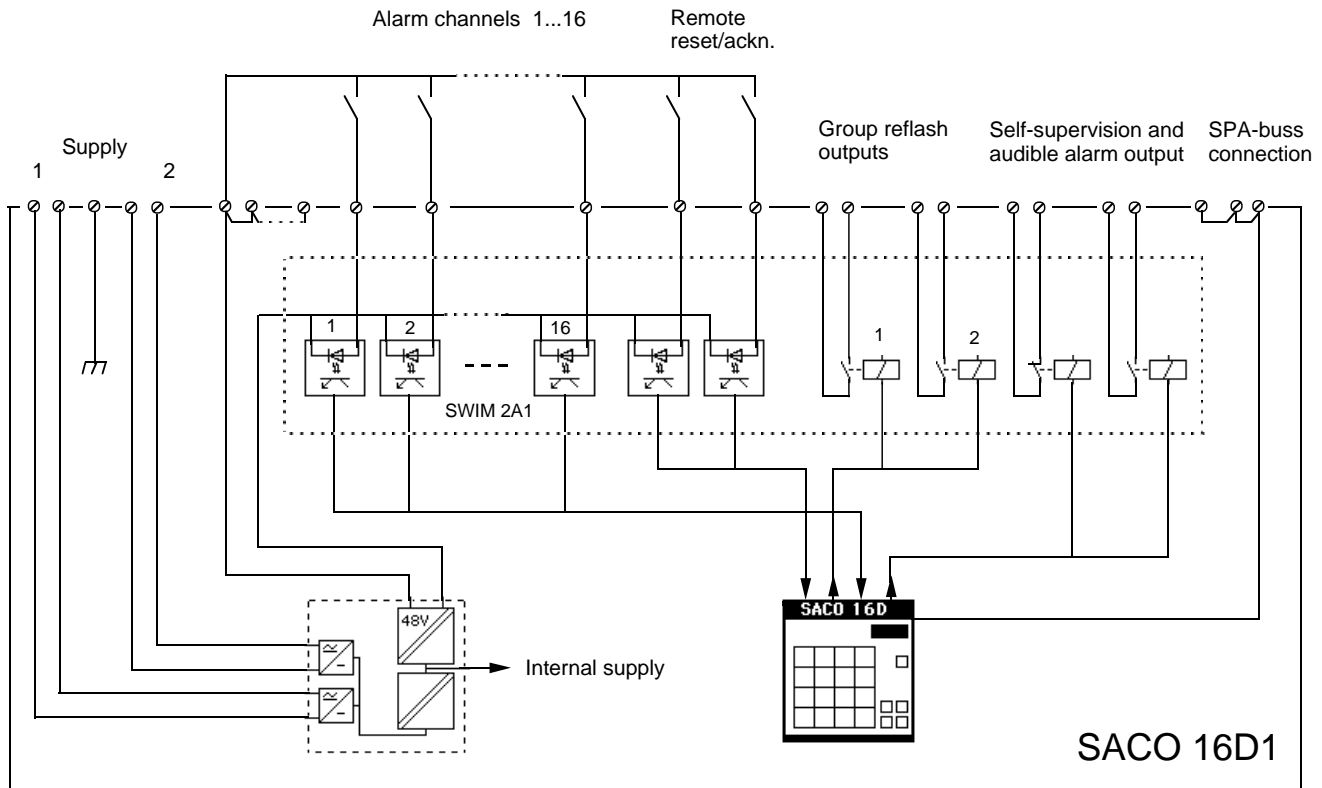


Fig. 1 Block diagram

Ordering**When ordering, please specify:**

Ordering information	Ordering example
1. Type designation and quantity	SACO 16D1, 5 pieces
2. Order number	RS 811 016-AA
3. Auxiliary voltage	$U_{aux} = 110 \text{ V dc}$
4. Accessories	-
5. Special requirements	-

Order numbers

Annunciator unit SACO 16D1	RS 811 016-AA, -BA
The last two letters of the order number indicate the auxiliary voltage U_{aux} of the annunciator unit as follows:	AA equals $U_{aux} = 80 \dots 265 \text{ V ac/dc}$
	BA equals $U_{aux} = 18 \dots 80 \text{ V dc}$

References**Additional information**

Colour brochure "Annunciator unit SACO 16D1 and SACO 16D3"	1MRS 750230-MDS EN
Colour brochure "SACO"	1MRS 750756-MDS EN
User's manual "Annunciator unit SACO 16D1"	34 SACO 16 EN1



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