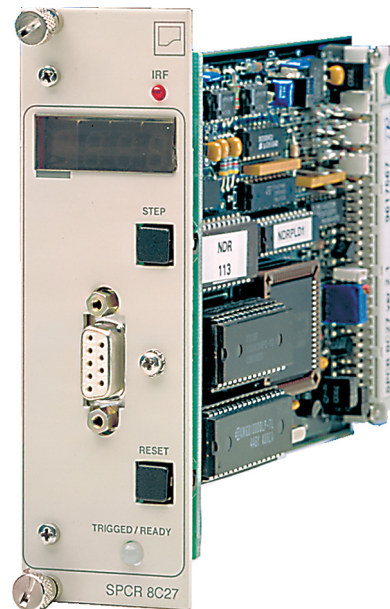


Product Guide



Features

- Versatile digital disturbance recorder module for recording various phenomena in the electric power system, especially during fault conditions
- Can be plugged into the location of any protection relay module of the SPACOM product range
- No separate wiring for measuring signals or power supply needed, because the recorder module is energized and powered from the host relay
- Fully self-contained recorder module, no protection relay modules needed for the function
- A total of eight analog channels and eight digital channels can be supervised by one disturbance recorder module
- Total recording length 12 seconds, when all channels are recorded. Extendable to 55 seconds
- Increased recording capacity by reducing the number of channels recorded
- The total recording time can be divided into shorter parts. Thus a total of 26 subsequent recordings can be made
- Triggering by overcurrent, overvoltage, undervoltage or by rising or falling edge of a binary signal
- Triggering also possible via a serial communication command given manually with push-buttons on the front panel or automatically at certain time intervals
- Time-tagged events obtained from a built-in real-time clock with battery back-up
- The history part of the recording, that is the part preceding triggering, can be set within 0...100% of the total recording time
- Maximum and minimum values of voltages and currents recorded in a separate limit value register
- Events such as triggering, exceeding of limit values and changes in binary signal status are recorded in a log register
- Settings and data recorded can be downloaded via the RS 232 port of the module or via the SPA interface of the host relay
- Settings and recordings retained during an auxiliary supply failure
- Optional easy-to-use PC software available for setting recorder parameters, reading recorded data and printing out recordings

Application

The disturbance recorder module type SPCR 8C27 is a high-capacity, fully digital data recording module, which is used together with protection relays and terminals of the SPACOM product range.

The recorder module provides an excellent tool for the network operating and design personnel to analyse the performance of the power system, its protection equipment and other components before, during and after a network disturbance situation. Fast identifica-

tion of a network problem and correct assessment of the network behaviour enable rapid corrective measures to be taken, sometimes even before a problem develops into a major network fault. Thus high power system reliability and availability can be achieved to satisfy society's demand for a better quality of power supply. The recorder module also provides basic information for improving the planning and construction of future power systems.

Design

The disturbance recorder SPCR 8C27 is designed to be inserted into any unoccupied relay module location of a SPACOM relay. The disturbance recorder module measures the signals available in the host relay case. Thus the number and type of signals to be recorded depend on the protection relay the location of which the disturbance recorder module occupies.

Recording

The disturbance recorder continuously monitors the input signals determined. When the triggering conditions are fulfilled, a recording of max. 12 seconds is made when all channels are used. 0...100% of the recording may precede the triggering. The recording memory is divided into 0.5 second blocks. When the shortest possible recording time, i.e. 0.5 seconds, is used, there is enough memory for 24 consecutive recordings.

The recording memory is used as a buffer storage. When the available recording capacity has been exceeded no further recordings are made, unless the recorder module has been otherwise configured.

The clock and the recording memory of the disturbance recorder module have been provided with a ten-year battery back-up to retain information over an auxiliary voltage outage.

The sampling rate for each recording channel is 500 Hz.

Maximum and minimum values

Further, the module records the maximum and minimum values of the measured phase-to-phase voltages and the associated time stamps. In the same way the module records the max. values of the phase currents and the associated time stamps. The module also

records the maximum value of the residual voltage and the maximum value of the neutral current, and their associated time stamps. For status signals the time of the last status change is recorded. For analog signals the recorded value and time change once a new maximum or minimum value is detected.

Event register

The event register is a log book containing a list of the events generated. The events to be recorded are selected separately in an event log mask. Any start-up of the recorder module and any event register overflow situation are recorded as events. The register also contains date and time stamps of the recorded events.

Unloading of recordings

The recordings can be unloaded via the serial buses. The recordings can be erased, even before they have been unloaded, with a command via the serial buses or manually by means of the push-buttons on the front panel.

Data communication

The indicator is provided with a serial interface connecting the equipment to the SPA bus.

Self-supervision

The indicator incorporates a sophisticated self-supervision system with auto-diagnosis, 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 indicator.

When a permanent internal relay fault is detected, the IRF indicator on the relay front panel is lit. At the same time a fault message is transmitted to the higher-level system over the serial bus. Further, in most fault situa-

tions, a fault code is shown on the display of the device. The fault code indicates the type of the fault that has been detected.

Auxiliary supply voltage

The fault indicator is powered from an external 24 V dc source (20...30 V dc). The power consumption is 1.5...3 W depending on the state of the indicators and the output relays.

Technical data

Table 1: Input channels

Number of input channels	8 analog channels 8 binary channels
Sampling frequency per channel	500 Hz (default)
Resolution of A/D converters	11 bit
Time difference between sampling of adjacent input channels	250 μ s (default)

Table 2: Recording memory

Recording capacity	1 MB SRAM	Max. 24 recordings Max. 224 blocks
	4 MB SRAM	Max. 26 recordings Max. 992 blocks
	1 block equals	0.5 s (=250 data samples)/channel

Table 3: Analog channels

Measuring ranges	phase-to-phase voltages; analog channels 1...3	0...2.5 \times U_n or 0...21 \times U_n
	phase currents; analog channels 4...6	0...2 \times I_n or 0...20 \times I_n
	residual voltage; analog channel 7	0...102% of U_n
	residual current (neutral current); analog channel 8	0...20% of I_n or 0...102% of I_n
Measuring accuracy of samples, value $>0.2 \times$ range, $f = 0...60$ Hz		$\pm 2\%$

Table 4: Data communication

Data code	ASCII
Serial code	SPA bus connector of host relay RS 232 connector on front panel

Table 5: Triggering conditions

Triggering level setting range	undervoltage setting; analog channels 1...3	0.2...overvoltage setting \times U_n
	overvoltage setting; analog channels 1...3	undervoltage setting...21 \times U_n
	overcurrent setting; analog channels 4...6	0...20.4 \times I_n
	residual voltage setting analog channel 7	0...102% of U_n
	residual current setting; analog channel 8	0...102% of I_n
	binary channel triggering condition	Rising edge Falling edge

Table 6: Real time clock

Resolution	5 ms
Accuracy	1 min/month or better without synch.

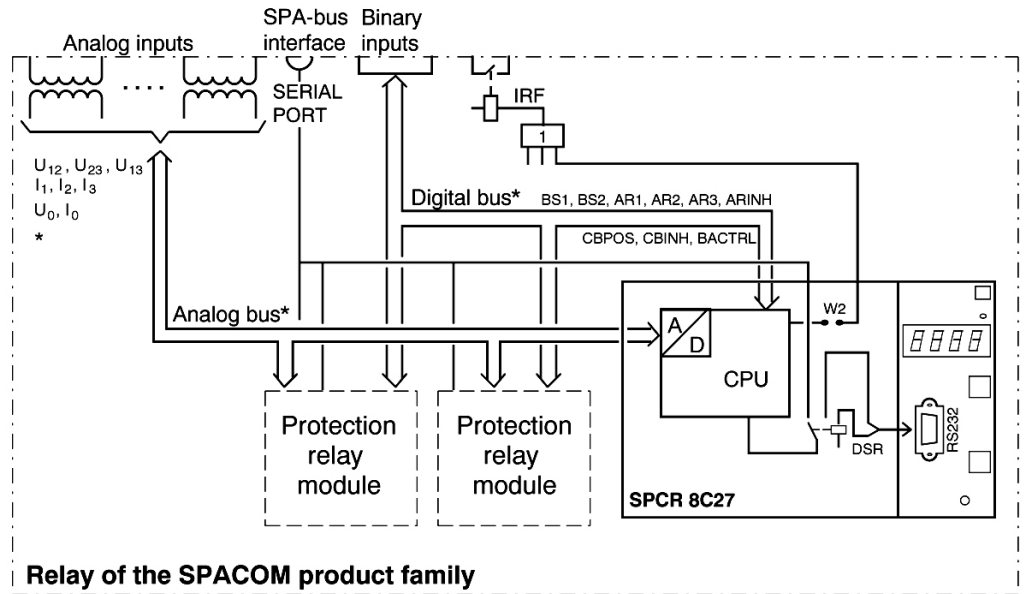
Table 7: Options

Optional PC software	Type SPCR EVAL, 3 1/2" floppy disk, 3 m connection cable
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Table 8: Tests and standards

EMC tests	Fast transient test (IEC 60255-22-4)	2 kV, 5/50 ns, 1 min	
	Electrostatic discharge test (IEC 60255-22-2)	Air discharge	8 kV
		Contact discharge	6 kV
Environmental conditions	Ambient temperature	-10...+55°C	
	Storage temperature	-40...+70°C	

Block diagram



Relay of the SPACOM product family

* The signals available for the disturbance recorder depend on the protection relay type

BSPER8C27

Fig. 1 Block diagram and sample connection diagram

Product Guide

Ordering**When ordering, please specify:**

Ordering information	Ordering example
1. Type designation and quantity	SPCR 8C27, 5 pieces
2. Order number	RS 892 011-AA

Order numbers

Disturbance recorder SPCR 8C27	RS 892 011-AA
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References**Additional information**

User's manual and technical description "Disturbance recorder SPCR 8C27"	1MRS 750511-MUM EN
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