Development, Production and Engineering of Industrial Electronics

ALARM MONITOR AM-xxE

Protection Program PZ-07023E

Application

Alarm monitors AM-xxE represent the part of IEL's range of annunciators. They offer economical solution for continuous monitoring of number of alarm contacts in processes, when there is no need for communication with the host. If the communication with the host is required it is necessary to apply monitors without "E" designation. Alarm monitor recognizes alarm condition via potenial free or externaly supplied field contacts and controls visual and audible alarm indication. Alarm monitor is developed to meet the most demanding reliability and availability specificatons, and it is intended for application in electric power plants, industrial plants and processes.

figure 1. Alarm monitor AM-16E

Main features

- economical solution for continuous monitoring of number of alarm contacts

-microprocessor based processing of 8 or 16 alarm signals (AM-8E or AM16E, fig. 1.)

-user friendly monitor programming on site

-alarm processing according to DIN 19235 or ISA alarm sequences

-self test, local and remote signalization of availability

-high immunity to electrical interference

-time limiting of audible alarm

-internal supplying of potential free input contacts galvanically insulated from auxiliary supply

-forming of group alarm

-first alarm recognition by quick flashing frequency

-synchronized flashing for several AM-xxE monitors

-easy entering of text for channels in prepared text forms

-small dimensions according to DIN 43700 for flush mounting instruments

-simple connection by plug-in terminal blocks

Functional description

Alarm monitors AM-xxE are developed to meet highest demands of reliability and availability. Sofisticated microprocessor technology used in AM-xxE ensures high reliability and offers a set of additional functions in comparison with clasic solutions.

Connection of several alarm monitors AM-16E is shown in figure 2.

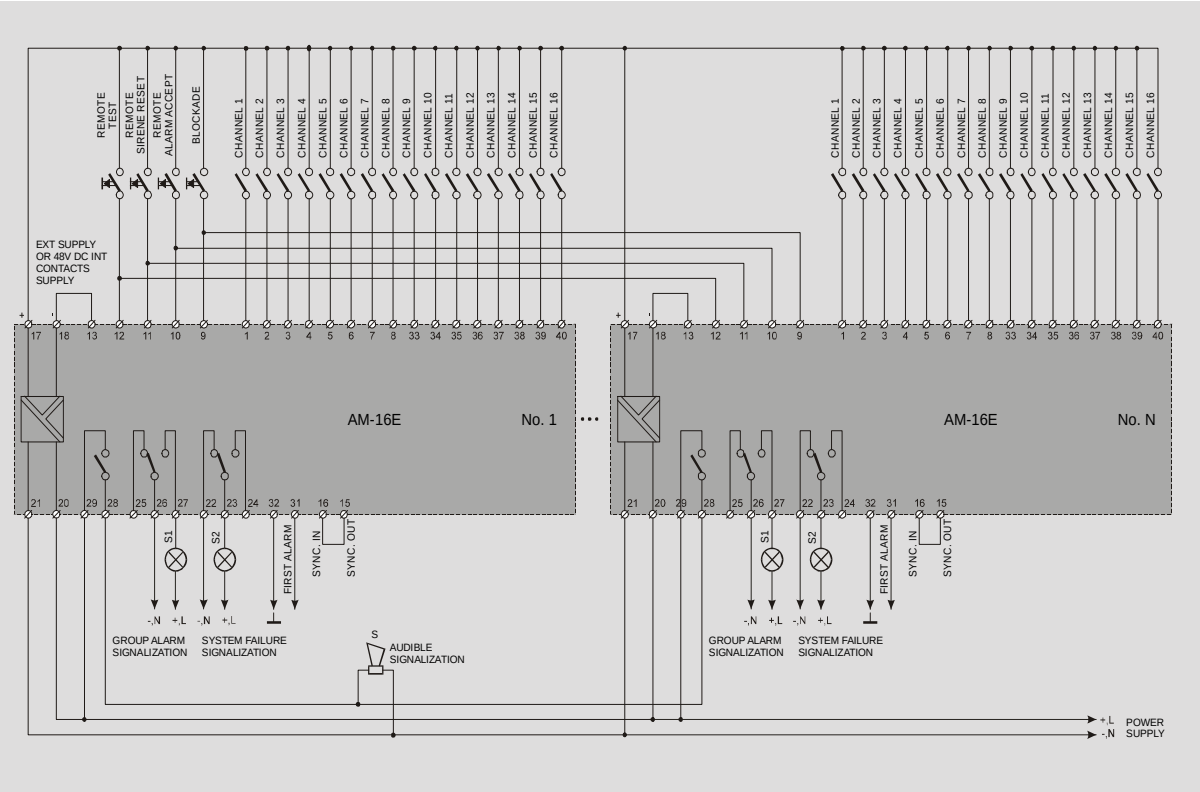

figure2. Terminal diagram of several alarm monitors type AM-16E

Potential free or externaly supplied contacts from the field are connected to input channels. The contacts can be normally open (NO) or normally closed (NC). The monitor's processing unit continuously monitors the condition of input contacts and according to selected alarm sequence and parameter setting controls visual alarm indication and output for audible alarm. AM-xxE can perform following alarm sequences: ISA-A1, ISA-M1, ISA-R1 or DIN 19235.

Often used sequence ISA-A1 operates on following principle: when input contact changes to alarm condition input channel recognizes the alarm, and after programmed delay (ALARM DELAY) associated indication LED beggins to flash and relay SIRENE activates audible alarm. By pushing the push button SIRENE RESET/LAMP TEST the audible alarm is switched off. Optionaly the audible alarm can be time limited (e.g. 30s). After reseting the audible alarm it is possible to quit the visual alarm indication by pushing the button ALARM ACCEPT. If the alarm condition still exists on the input, flashing light changes to permanent, otherwise the visual indication is extinguished. Other alarm sequences are described in operators manual.

The monitor has two additional signalling relais. First relay (GROUP ALARM) activates contact when the input from programmed group changes to alarm condition. Second relay (SYSTEM FAIL) activates contact when alarm monitor is not available. This relay is normally energized.

According to programmed selection input channel can be blocked by external contact (BLOCK). After vanishing the external blockade selected channel stays blocked for programmed unblocking delay (10ms, 100ms, 2s or 15s).

Alarm accept, sirene reset and test of indication LEDs can be performed via push buttons on front panel (fig. 1.), or via external remote push buttons (fig. 2.).

The monitor can be configured for first alarm recognition. In this case the first alarm will flash with double frequency. The function of first alarm recognition can be extended to several alarm monitors by connecting the monitors according to fig. 3a. If the synchronisation of flashing frequencies for several units is requested the monitors should be connected according to fig. 3b.

The monitor includes power supply for galvanically insulated supplying of internal electronics, field contacts and external push buttons.

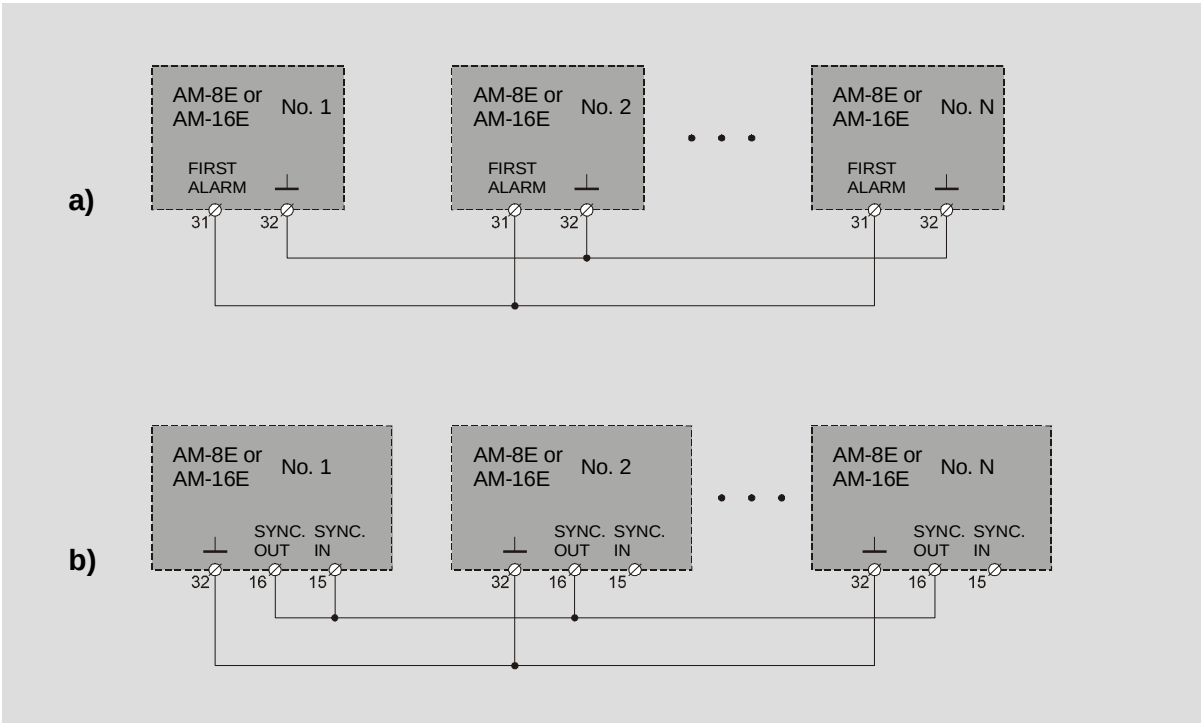

figure 3. First alarm recognition and flashing synchronisation for monitors AM-xxE

Programming - configuring of the monitor

Application of microprocessor technology in alarm monitor AM-xxE ensures great flexibiliy in solving various process demands. Programming (configuring) of the monitor is realized user friendly via DIP switches located under the front panel of the monitor. In this way complicated, time consumming on site programming, that usually require additional programming unit is avoided.
Under the front panel of the monitor (figure 4.) there are six (AM-8E) or eleven (AM-16E) groups of DIP switches used for programming- configuring the monitor.

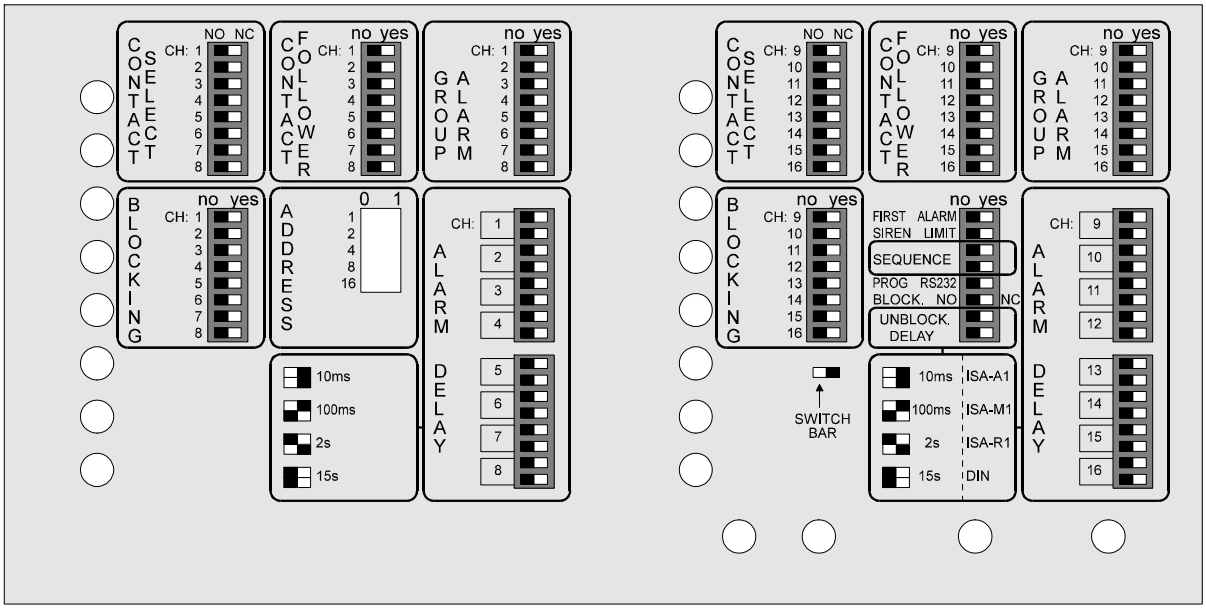

figure 4. DIP switches for programming alarm monitor AM-16E

CONTACT SELECT.. 8 switches for selecting the type of input contact - normally open (NO) or normally closed (NC)

GROUP ALARM..... 8 switches that enable forming the group alarm for selected channels. Group activates output relay GROUP ALARM.

BLOCKING ..... 8 switches that enable blocking of sellected channel with external blockade input

ALARM DELAY ..... 16 switches for sellecting one of preset values for time delay (10ms, 100ms, 2s or 15s), separately for each channel.

FOLLOWER..... 8 switches used for sellecting the channel that realize "contact follower" function. Selected channel does not perform the alarm sequence, it indicates only the condition of input contact.

SYSTEM..... this set defines the system parameters.

first alarm..... selection of first alarm function (first alarm flashes with double frequency)

sequence ..... selection of alarm sequence: ISA-A1, ISA-M1,ISA-R1 or DIN 19235

blocking..... selection of contact type for blockade input - normally open (NO) or normally closed (NC)

unblocking delay ..... selects the time delay after vanishing the blockade input (10ms, 100ms, 2s or 15s)

sirene limit ..... selection of limited or infinite time duration for audible alarm

Specifications

number of input channels ..... 8 for AM-8E
16 for AM-16E

alarm inputs *..... potential free contacts normally open (NO) or normally closed (NC)

blockade input * ..... potential free contact normally open (NO) or normally closed (NC)

external push button inputs *
EXT ALARM ACCEPT,
EXT SIRENE RESET,
EXT TEST..... potential free normally open contact (NO)

supply for inputs contacts *... internal 48V DC, galvanically insulated from auxiliary supply, or external supply on request

loop current of closed input contact..... 4mA with 48V DC supply

time delays
alarms..... programmable: 10ms, 100ms, 2s or 15s; other four times on request (max. 325s)
unblocking delay..... programmable: 10ms, 100ms, 2s or 15s; other four times on request (max. 325s)
sirene limit time ..... 30s; other time on request (max. 255s)

flashing frequency..... alarm 1Hz
first alarm 2Hz

*** On request alarm inputs, blockade inputs and external push button inputs can be supplied from external DC or AC supply.**

local LED indication
alarm .....LED red
POWER ON.....LED green
SYS FAIL .....LED yellow

signalling relais
audible signalization
(SIRENE).....normally open (NO) contact, 250V, 5A
group alarm signalization
(GROUP ALARM).....changeover contact, 250V, 5A
system failure signalization
(SYS FAIL) .....changeover contact, 250V, 5A

auxiliary power supply
monitor supply voltage .....24, 48, 110 or 220V DC (+45% , -20%)
110 or 220V AC (+10% , -20%)
galvanically insulated
power consumption.....AM-8E max. 5VA
AM-16E max. 7VA

general data
temperature range.....-10°C.....+55°C
insulation test voltage 2,0kV, 50Hz, 1min

dimensions
AM-8E .....96x96x90 mm, according to DIN 43700
AM-16E .....192x96x90 mm, according to DIN 43700

connections
AM-8E .....two 16 pol plug-in terminal block (2,5 mm^2)
AM-16E .....tree 16 pol plug-in terminal block (2,5 mm^2)

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