Development, Production and Engineering of Industrial Electronics

ALARM MONITOR AM-xx

Protection Program PZ-07014E

Application

Alarm monitors AM-xx are used for continuous monitoring of number of alarm contacts in processes. The monitor recognizes alarm condition via potential 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-16

Main features

-microprocessor based processing of 8 or 16 alarm signals (AM-8 or AM16, 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

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

-high immunity to electrical interference

-time limiting of audible alarm

-first alarm recognition by quick flashing frequency

-synchronized flashing for several AM-xx 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

-RS485, optical, Ethernet communication with host

Functional description

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

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

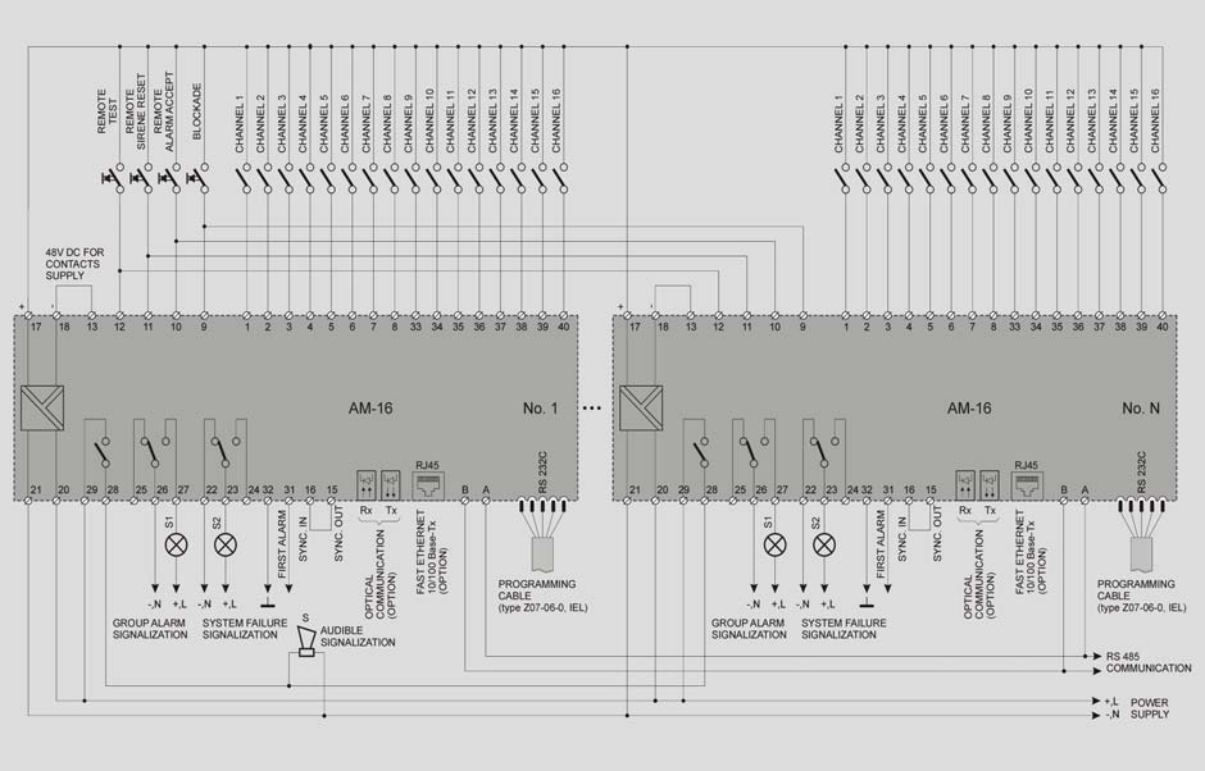

figure2. Terminal diagram of several alarm monitors type AM-16

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-xx 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.

Alarm monitor can communicate with host computer via several types of communication (RS485, optical, Ethernet).

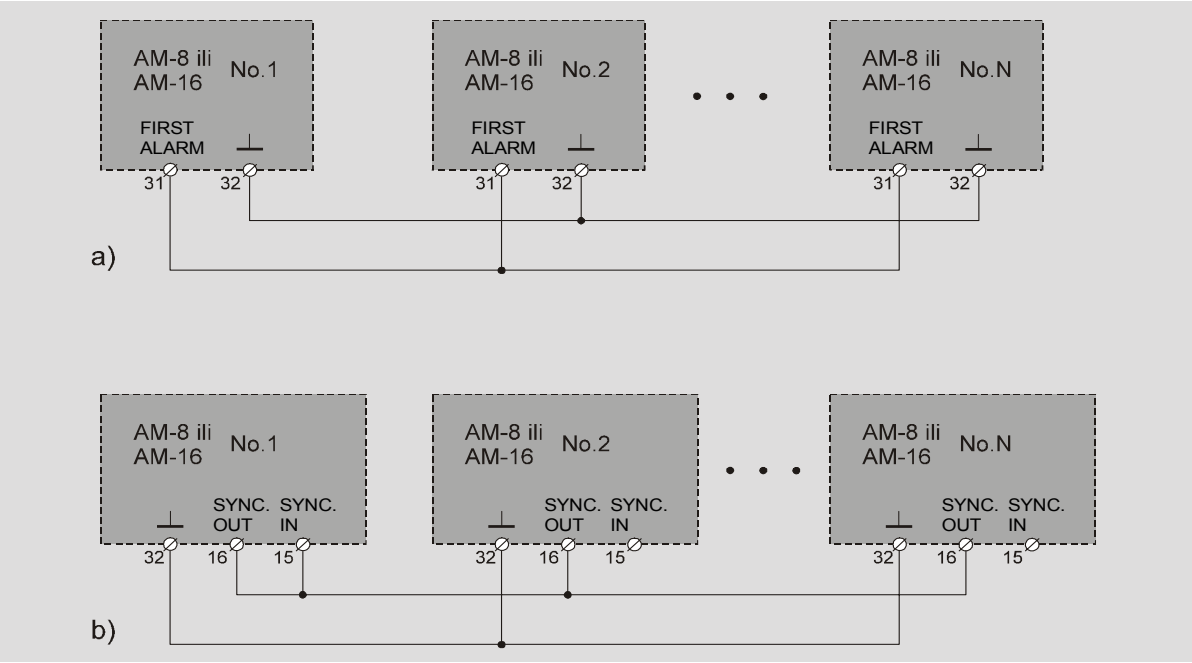

figure 3. First alarm recognition and flashing synchronisation for monitors AM-xx

Programming - configuring of the monitor

Application of microprocessor technology in alarm monitor AM-xx ensures great flexibiliy in solving various process demands. Programming (configuring) of the monitor is realized user friendly via DIP switches. Six (AM-8) or twelve (AM-16) groups of DIP switches used for programming - configuring the monitor are located under the front panel of the monitor (fig. 4.).
Besides DIP switch programming the monitors can be programmed by means of personal computer via standard RS 232 C communication.

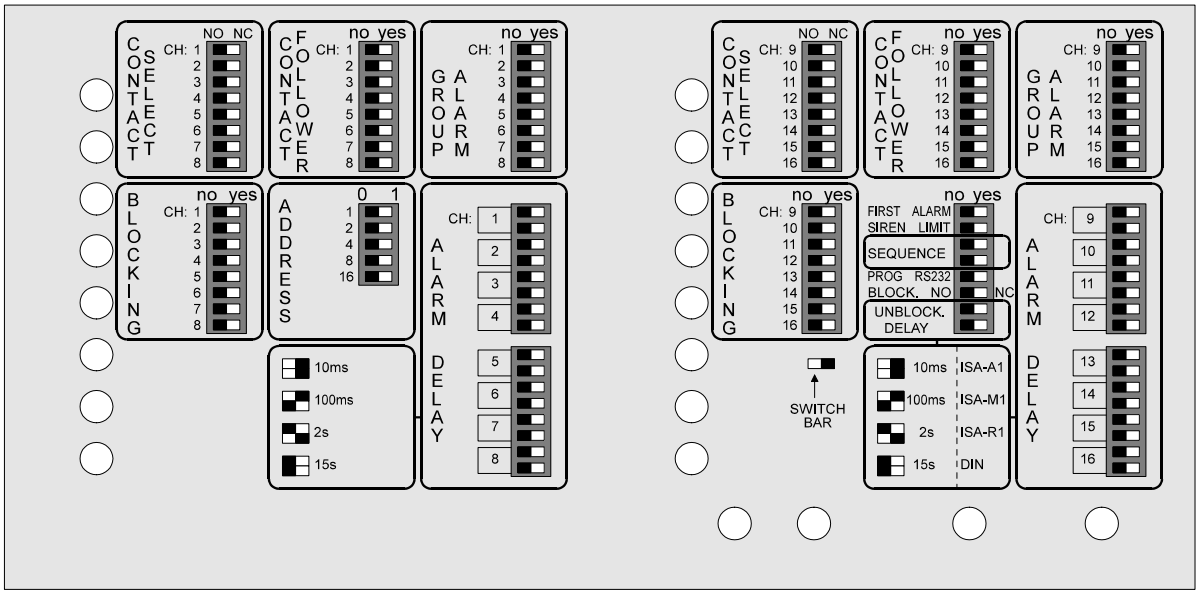

figure 4. DIP switches for programming alarm monitor AM-16

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.

ADDRESS ..... 5 switches for defining communication address of the unit (on AM-8 the switches are located on rear side of the unit)

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

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

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 ili 15s)

PROG RS 232..... monitor programming by personal computer (RS 232) or DIP switches

Specifications

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

alarm inputs [x].....potential free contacts normally open (NO) or normally closed (NC)

blockade input [x].....potential free contact normally open (NO) or normally closed (NC)

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

supply for inputs contacts [x] ...internal 48V DC, galvanically insulated from auxiliary supply (external 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

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

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

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

communication
RS485 (option).....on rear wall, 3 pole plug-in terminal
optical (option).....on rear wall, 820nm, ST connector or 660nm, connector SNAP-IN
Ethernet(option).....on rear wall, RJ45 connector
protocols .....MODBUS RTU, PROFIBUS DP, MODBUS TCP
programming input..... RS 232 C

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-8 max. 8VA
AM-16 max.10VA

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

dimensions
AM-8 .....96x96x150 mm, according to DIN 43700
AM-16 .....192x96x150 mm, according to DIN 43700

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

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