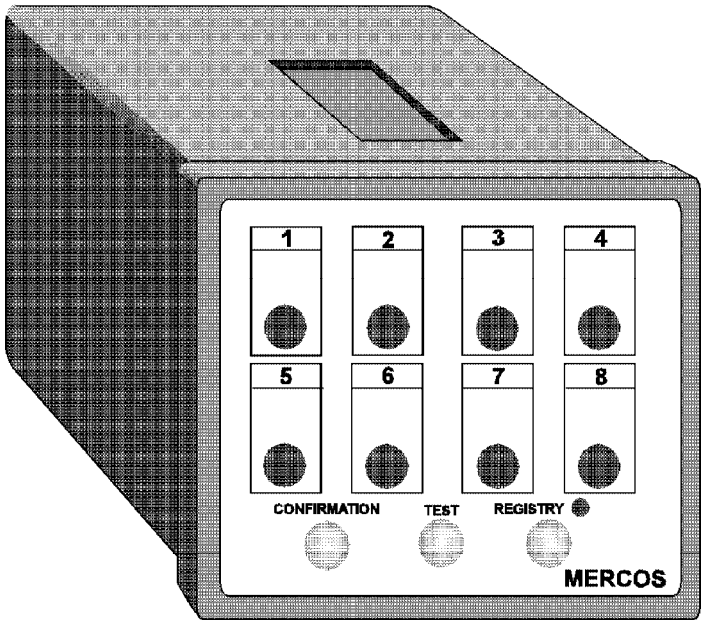
F A I L U R E A L A R M

- ***microcomputer control***
- ***programming trough the button***
- ***panel mounting***
- ***three buttons for the manual***
- ***2 times of the failure detection***
- ***REGISTRY OF LAST 8 FAILURES***
- ***8 failure inputs***
- ***8 signalling outputs***
- ***1 output for the associated failure***
- ***1 output for the sound alarm***

model: ***MERPO 02***



Fai lure Alarm i s a mi croprocessor-based system desi gned for processi ng, di splayi ng and regi steri ng of fai lure messages from technologi cal processes. It i s i deal for moni tori ng and si gnali ng of fai lure condi ti ons i n all si tuati ons,where one need a very fast solvi ng of problem wi thout any speci al and cost means. Fai lure alarm contai ns ei ght voltage logi cal i nputs and two i solated relay outputs. Ni ne LEDs and three buttons gi ve opti cal i nformati on and serve for communi cati ons wi th operator.Four jumpers (J1-J4) and one button ("PROG") are used for programmi ng of functions of failure alarm.

Fai lure Alarm features user programmi ng of: number of i nputs for the moni tored fai lure states (8 fai lures or 4 fai lures and 4 status messages) ,logi cal value of the fai lure (fai lure signaling by normally open or normally closed contacts, types of contacts may be combi ned , e.g. 5 n.c. contacts, 3 n.o. ones),functi ons of slow or fast flashi ng of si gnali ng LEDs,and functi on of osci llati ng or non-oscillating relay contact of a sound alarm.
Failure Alarm keeps **eight last** failure states in **register** after power interruption.
After recovery the condi ti ons before power interruption are signalled.
Fai lure Alarm uni ts may be parallel-connected.
The buttons "test","confi rmati on" and "fi rst fai lure si gnalli ng" common function.

Specifications

MERPO02 CAN NOT BE USED FOR EMERGENCY POWER-OFF OF ANY TECHNOLOGICAL PROCCES OR DEVICE.

failure inputs:
- 8 monitored failures
- 4 monitored failures and 4 status messages
- detection of the first failures
- fast flashing for first failures
- slow flashing for all failures
- register of eight las failures
- selection of the failure reaction time

outputs:
- 8 outputs for signalling of the failures (LEDs)
- 1 output for an associated failure
- 1 output for the sound alarm (software realization of function of oscillating/non-oscillating relay)
- 1 output for check of operator activities

"registry" of 8 failures:
- viewing of the earliest failure
- start of viewing by one button
- displaying each failure after 2 sec

mounting dimensions:
- panel cutout: $90^{+0,5}$x $90^{+0,5}$ mm
- depth including terminals: 100 mm
- depth excluding terminals: 86 mm
- overall dimensions: 96x96x100 mm

power :
- 230 V /50Hz /5VA
- 24 V DC / 3,5 W

excitation supply:
- 24V unstab. / 50 mA/ DC

ercos

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Description of Function of Failure Alarm

After power is connected, green diode LED1 locating near buttons will to light permanently. If supply voltage is slow, LED does not light.
If supply voltage is correct,the Failure Alarm performs following functions:

Signalling of failures

Presence of a fai lure i n some of the fai lure i nputs wi ll cause li ghti ng or flashi ng of correspondi ng output LED. Si multaneously,output for sound alarm and ouput for associated failure are activated /it may be used for control system or emergency shutdown/.

Following situations concerning LEDs may occur:

a/ The fi rst appearance of fai lure wi ll cause fast flashi ng of correspondi ng LED.Other fai lures,that occur after the fi rst fai lure,wi ll cause slow flashi ng of correspondi ng LEDs.Flashing continues,until the button for confirmation of failure is pressed.

b/ Each appearance of fai lure wi ll cause slow of correspondi ng LED.Flashi ng conti nues,unti l the button for confirmation of failure is pressed.

Following situations concerning sound alarm output:

a/ Presence of a fai lure i n some of the fai lurei nputs willcause slow oscillation of relay s contact.Oscillation of relay continues,until the button for confirmation of failure is pressed.

b / Presence of a failure in some of the failure inputs will cause ,that contact of the relay i s closed and latched.Contact is closed,until the button for confirmation of failure is presed.

FUNCTION OF ASSOCIATED FAILURE

If no fai lure i s present,contact of associ ated fai lure i s closed.In the case of acti vati on of at least one fai lure i nput,contact of relay i s open.If any one of fai lure does not last ,contact of relay of associ ated fai lure i s closed,after pressing the "confirmation" button.

Confirmation of the failure

If failure states last,all activated LEDs (slow/fast flashing) wi ll be sti ll after pressi ng the "confi rmati on" button.If fai lure states i s fi ni shed,all correspondi ng LEDs are getting dark after pressing of the "confirmation" button.If fai lure occur at the moment of pressi ng or holdi ng the button,corresponding LED will light. Simultaneously,after pressi ng the "confi rmati on" button, n.o. contact of relay for sound alarm will be open.

If no failure is present,contact relay of associated failure is closed after pressing the "confirmation" button.

Test of the associated failure

Test of the associ atedfai lure i s possi ble only by si multaneous pressi ng three buttons ("confi rmati on", "test","registry"). The reason why is safety point of view when the units are used in technological processes. Firstly one should press the "test" button and then following two buttons "confirmation" and "registry".

Duri ng pressi ng above menti oned tri ni ty of buttons the contact of relay for associated failure is closed.

After releasi ng these three buttons the pri mary state of Failure Alarm is recovered.

Test of signalling LEDs + test of the sound alarm

After pressi ng the "test" button all LEDs wi ll li ght and output for sound alarm i s acti vated.

Si multaneously,i nformati on LED1 locati ng near buttons wi ll start to flash fast. Thi s state conti nues ti ll the "test" button is released.

Then normally conditions of Failure Alarm are recovered.

Review of failures from "registry"

After pressing the "registry" button signalling LEDs and check LED1 get dark for a moment (if they are lighting). Sound alarm output is disabled. LED1 falsh for a moment and then LEDs sig nalling the earlist failure begin to light. Thus,the 8 consecutive failures are displayed. If no failure is in registry, no signalling LEDs will light after flashing of LED1. If new failure state occur during review of failure registry, review is stopped and Failure Alarm displayed current conditions.

When the review of failures from registry is finished, the LED1 lig hts permanently. Failure Alarm then change from review mode to mprimary state.

If status message mode is set, 4 status LEDs are dark during review of failures from "registry".

Programmin

We can **simultaneously** inputs and outputs. There are one "PROG" button (hidden under front panel) and 4 jumpers (J1-J4). They are i ntended to programmi ng of fai lure alarm modes.

Failure Alarm is connected to power voltage. All onputs are set on logical level corresponding with normal state.

input:

Any i nput can be acti ve i n logi cal low level or logi cal high level. Any combination of inputs can be set: e.g., 3x low level i n fai lure condi ti ons and 5x hi gh level fai lure conditions.

outputs for failure signalling:

Combi nati on of outputs can be set usi ng jumpers J1-J4. See chart on the next page.

a / LED correspondi ng to fi rst fai lure flashes fast, other LEDs flash slowly

b/ LED corresponding to first failure flashes slowly, other LEDs flash slowly

c/ oscillation of relay contact for sound alarm

d/ permanent closing of relay contact for sound alarm

e/ selection of the failure reaction time /100ms or 1s/

If desi red types of i nputs and outputs are set, we press "PROG" button to finish programming.

Auxiliary LED1 gets dark and lights again after 2 sec. This is the end of programming.

Failure Alarm will returns to primary state and reset of failure registry will be done.

Failure Alarm specifications

parameter	value	units	note
power supply power supply	230 VAC , 50 Hz	V , Hz	
	24 VDC	V	
curent consumption /excitation supply loaded by nominal current/	0,012	A	
energy input /protection on primary side -power 230 VAC	5.0 / T50mA	VA /A	slow appliance fuse
energy input/protection on primary side -power 24 VAC	3.0 / T500 mA	VA / A	slow appliance fuse
excitation supply	24VDC max.50mA	V DC/A	unstabilized for output terminals
8 failure inputs /programmable type of input/	voltageless		internal power supply 24VDC (unstab.) in unit
	voltage		external power 24 VDC
type of input - logical 0	0 - 5	V	
type of input - logical 1	11 - 24	V	
times of the failure detection - 2 times, user selectable with jumpers	1	s	
	100	ms	
number of parallel-connected failure alarms	max. 15		max cable lenght **20** m
number and type of relay outputs	2	-	contact
1 associated failure output max loading of output contacts	max. 230/2	V/A AC	n.o. contact
1 output for sound alarm / programmable function of oscillating/non-oscillating relay/ , max loading of output contact	max. 230/2	V/A AC	n.o. contact
design	panel mounting	-	
mechanical lifetime of output contacts	min. 2 . 10^7		
electric strenght	510 / 50 / 1	Vef /Hz / min.	
enclosure	IP 20	-	optional IP 65
dimensions / including terminals/	96x96x100	mm	Hx Wx D
mounting /panel cutout/	$90^{+0.5}$ x $90^{+0.5}$	mm	screw clamps
operational temperature	0 - 50	°C	
weight	0,36	kg	
connecting	terminal strip	max. cross-section of wire 2.5 mm^2	
operation mode	continous		
EMC due standart	due ČSN EN 61000-4-2,3,4,5,6,8,11		
	due ČSN EN 61000-6-3		

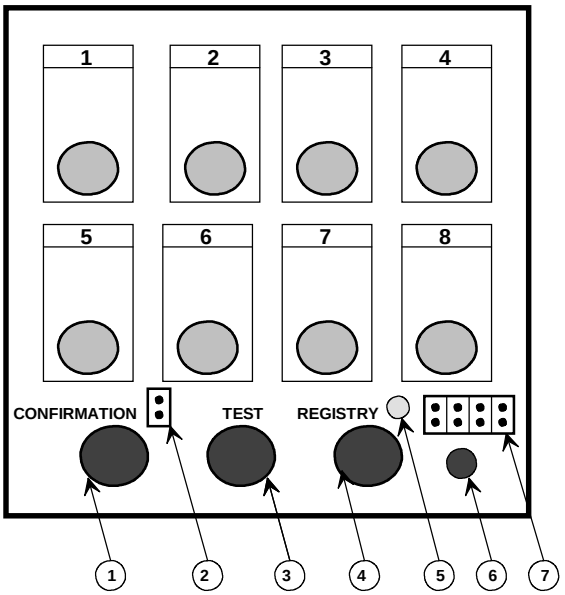
Ordering example

MERPO 02 - . .

a b

a	**power**	**1 .... 230 VAC, 50 Hz**
		2 .... 24 VDC
b	**output 8 relays for failures**	**1 .... relayless**
		2 .... 8 outputs relays for failures

Front panel of Failure Alarm



1 - button "CONFIRMATION" failure

2 - jumper J5 / function for 8 relays of following LEDs diod:
ON - non-oscillating relay , OFF: non-oscillating relay

3 - button "TEST" / test of signalling LEDs + test of the sound alarm /

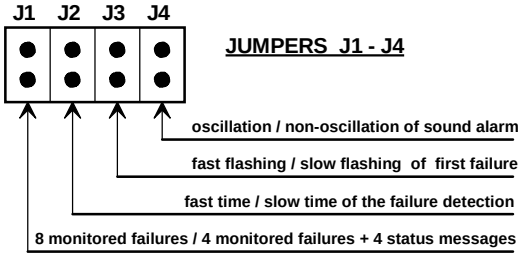
4 - button "REGISTRY" /viewing of failures /

5 - LED1 for check of operator activities

6 - button "PROG"

7 - jumpers J1-J5 for programming

J1	**ON**	8 failure inputs
	OFF	4 failure inputs + 4 status messages
J2	**ON**	fast time of the failure detection - 100 ms
	OFF	slow time of the failure detection - 1s
J3	**ON**	fast flashinf of the first failure
	OFF	slow flashing of the all failures
J4	**ON**	oscillation of relay contact for sound alarm
	OFF	**permanent closing of relay contact for sound alarm**



Example of Wiring of Failure