Parameterizable compact annunciator with permanent display

FSM 10 - Drop-flap annunciator

- Permanent display even on power failure
- Compact module for 10 alarms
- Supply and alarm signal voltage 12 V...250 V AC/DC
- Indication with 10 green indicating discs with green LED
- Live contact and nonvolatile history- / event memory (time resolution 5 ms)
- 4 output relays, 4 buttons, 6 functional inputs
- 2 parameterizable collective reports and internal horn
- Parameterization via DIP switches or via PC program
- Pluggable connection terminals (screw or spring cage terminals)
- Labelling strips pocketable into transparent window

Datasheet

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MSM-FSM-DB-UK-006

Functional description

The compact FSM 10 drop flap fault annunciator is installed in a panel-mounted housing in accordance with DIN 43781. It has 10 green drop flaps, each with an LED to display the signals. With a very compact design, the fault annunciator offers energy-independent long-term storage of the pending signals by means of bistable mechanical display elements. Battery buffering is not necessary. The signals can be optimally detected at all times, regardless of light influences. The integrated event memory, which can be read out via the serial interface, allows simple archiving of the processes. The optionally connectable printer can be used to log events immediately or at the touch of a button.

The drop-flap fault annunciator comprises the following functional components:

- 10 drop-flap indicator elements with integrated LED
- 10 galvanically separated reporting inputs (E1 ... E10)
- 6 galvanically separated, freely parameterisable function inputs (F1... F6), e.g. acknowledgement, printer control etc
- Live LED
- 4 programmable output relays with change-over contacts (R1 ... R4)
- 4 programmable buttons (e.g. acknowledgement, printer control, lamp test etc.)
- 10 DIP switches for basic parameterisation
- 2 CAN bus connection sockets for parallel connection up to 4 fault annunciators (flashing synchronisation, joint acknowledgement, lamp test etc.)
- RS 232 interface for connecting a laptop (parameterisation, reading the event memory) or for connecting a serial printer
- real-time clock with battery backup and connection socket for external DCF 77 aeria
- Rear status LED (RS232, DCF77, CAN-BUS)

A maximum of 4 FSM 10 can be networked via the CAN bus and thus consolidated to form a group. This leads to a system, in which all 40 alarm inputs, 16 buttons and 24 function inputs can be processed in each individual component.

The fault annunciator can realise different reporting procedures. The options range from simple standards, such as first or new-value reporting, to complicated application-specific procedures. The indicating disks, associated LEDs and output relays are controlled and the effect of the keys and function inputs determined depending on the alarm sequence. In the basic fault annunciator parameterisation, the device can be set to the most common reporting procedures via DIP switch. Additional setting options are available through software parameterisation, enabling very flexible adaptation of the fault annunciator to almost any task. For example, two reporting groups may be formed that can even realise different reporting procedures.

Application examples

- Climate control supervision in railroad vehicles
- Food supervision
- Monitoring of transformer and stationary or mobile emergency power generators
- Industry and chemical plants
- Replacement of conventional drop flap relays

Parametrierung via DIP switch

In the delivery state, the fault annunciator is pre-parameterised and in most cases can therefore easily be adapted to a particular application via the DIP switches provided at the rear. The following basic settings apply:

- reporting sequence (first-up value / new value)
- triggering of the inputs 1 … 5 with NO or NC contacts
- triggering of the inputs 6 … 10 with NO or NC contacts
- collective report 1 standard or inverted
- collective report 2 standard or inverted
- automatic horn acknowledgement „on" or „off"
- horn suppression with follow-up message „on" or „off"
- unit No. (1…4)

Parameterization via PC

In order to adapt the fault annunciator to a wide range of different applications, the following parameter can be modified additionally:

- delay times for each individual alarm input
- NC or NO processing for each individual alarm input
- assignment of the inputs to the two reporting groups
- definition of the reporting procedure for the reporting groups
- definition of the button functions and function inputs
- assignment of relay function to the outputs (e.g. ∑1..2, horn 1, horn 2, live alarm)
- horn sounding duration with automatic acknowledgement

Logging

Appearing events will be logged with a time stamp in the non-volatile event memory. Thereby parameters can be assigned which events are to be logged:

- incoming alarm
- receding alarm
- button or function input activated
- incoming first value
- incoming supply voltage
- receding supply voltage

The individual records of the archive consist of the date, original time and the parameterizable report text of the respective event and can be output by pressing a button or controlled by one of the function inputs via the RS232 interface. Output in ASCII format or direct control of a printer is possible. Various printer drivers are available.

```
Do 15.01.2004 17:18:36.70 Logging print Transformer station 1

Do 08.01.2009 17:09:48.64  Triggered function „print out"
Mi 07.01.2009 08:30:26.95  Receding alarm 110 kV
Mi 07.01.2009 08:15:25.54  Acknowledgement alarm
Mi 07.01.2009 08:15:24.56  Acknowledgement horn
Mi 07.01.2009 08:15:19.75  Upcoming alarm 110 kV
```

On request we supply you with your custom predefined parameter settings for your application.

Alarm sequences

- new-value sequence with 1-frequency flashlight and single acknowledgement
- first-up-value sequence with 1-frequency flashlight and single acknowledgement
- new-value sequence with 2-frequency flashlight and single/double acknowledgement
- first-up-value sequence with 2-frequency flashlight and single/double acknowledgement

Alarm sequences

The drop-down flap always shows green when the associated LED flashes or is permanently lit.

Further details on the integrated fault alarm sequences can be found in the separate documentation "EES fault alarm sequences"
(Document name SM-MA-ZI-UK“).

Collective report

Collective report	Function	Meaning
1	static / parallel to input	The collective report is set with the first incoming alarm and remains as long as a fault is present. It goes out automatically without acknowledgement when all faults have been eliminated.
2	static / parallel to output	The collective report is set when an alarm is upcoming and only resets if all alarms have been gone and been acknowledged.

Horn triggering

Function	Description	Meaning
Horn triggering (adjustable via DIP-switch)	retriggerable	Horn will be retriggered, even if there are alarms already lining up.
	not retriggerable	Horn will only be retriggered, if no alarms are longer present.
Horn acknowledgement	manual (continuous tone)	Horn will be acknowledged manually via button or on functional input.
	automatic (pulse tone)	Horn will be acknowledged according to the preset time.
Horn lock	None	Horn can always be acknowledged.
	Alarm acknowledgement	Horn acknowledgement is only possible after acknowledging the alarm.

Assignment of the function relays ex works

- Relay 1 - Collective report parallel to input
- Relay 2 - Collective report parallel to output
- Relay 3 - external horn
- Relay 4 - live contact

Technical data

Typ	FSM 10-12	FSM 10-24	FSM 10-60
Art.-Nr.	58FSM1000000	58FSM1001110	58FSM100E330
Supply voltage Rated voltage Range	12 V AC / DC 10 … 19 V DC 8 … 13 V AC	24 V AC / DC 19 … 37 V DC 14 … 26 V AC	48 V AC / DC + 60 V DC 37 ... 73 V DC 26 ... 51 V AC
Insulation of the supply voltage against all other voltages	500 V_{eff}	500 V_{eff}	500 V_{eff}
Voltage of the signalling and function inputs Rated voltage Range	12 V AC / DC 9 … 35 V AC / DC	24 V AC / DC 18 … 50 V AC / DC	48 and 60 V AC / DC 28 ... 75 V AC / DC
Input resistance	ca. 4 kΩ	ca. 8 kΩ	ca. 22 kΩ

Type	FSM 10-110	FSM 10-220
Art.-Nr.	58FSM1004440	58FSM1005550
Supply voltage Rated voltage Range	110 AC / DC 100 ... 370 V DC 85 ... 264 V AC	220 V AC / DC 100 ... 370 V DC 85 ... 264 V AC
Insulation of the supply voltage against all other voltages	3 kV_{eff}	3 kV_{eff}
Voltage of the reporting and function inputs Rated voltage Range	110 V AC / DC 55 ... 130 V AC / DC	220 V AC / DC 150 ... 260 V AC / DC
Input resistance	ca. 70 kΩ	ca. 200 kΩ

Other voltages can also be supplied on demand.

Power consumption	typically 1 – 2 W; short-time max. 4 W
Response delay	5 ms - ca. 1 min; standard setting 100 ms *
Horn sounding duration with automatic acknowledgement	1 ... 255 s; standard setting 10 s
Event storage	Ring storage with 1023 entries
Load capacity of relay contacts	
minimum	1,2 V or 1 mA 50 mW
maximum	250 V AC / 1 A (2 A with pure ohmic load) 30 V DC / 2 A 110 V DC / 0,2 A 220 V DC / 0,1 A
Flashing frequency	
Flashing	1 Hz
Slow flashing	0,5 Hz

Technical data

Isolation voltage	
Signal and function inputs	
against all of the other voltages	4 kV^{eff}
Function inputs 1 ... 3 against 4 ... 6	2,5 kV^{eff}
Relay contacts	
against all of the other voltages	4 kV^{eff}
against each other	500 V

Potential difference between the neutral conductor of the reporting groups	
Signal inputs 1 ... 5 and 6 ... 10	50 V

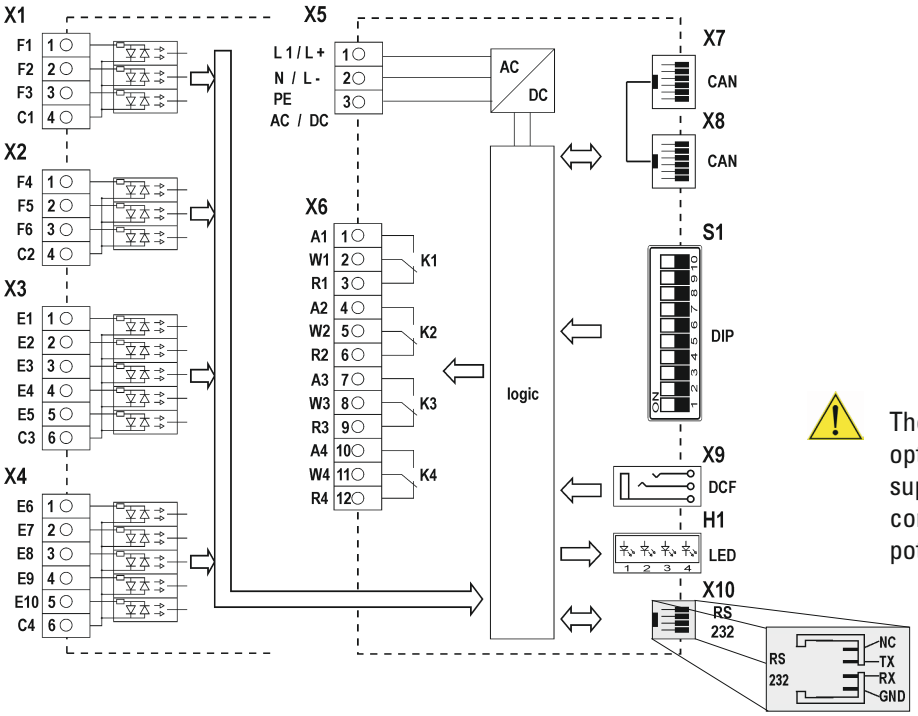
Mechanical data	
Front frame	96 x 96 mm; maximum installation depth 125 mm
Front panel aperture	91 x 91+0,5 mm
Mounting position	arbitrary
Weight	approx. 0,52 kg

* With alternating current (AC) the response delay in the lower signal voltage range can be increased in dependency of the signal form.

Environmental conditions	
Operating and ambient temperature	-20 °C ... +60 °C without condensation (supply voltage < 110 V) -10 °C ... +60 °C without condensation (supply voltage >= 110 V)
Storage temperature	-20 °C ... +70 °C without condensation
Permissible relative humidity	maximal 75% on average over the year (group F DIN 40040)
Protection class at the front	IP 54; IP 65 with transparent protective cover
Protection class at the rear	IP 20
Connection terminals	pluggable
Cross-section rigid or flexible	
without wire sleeves	0,2 ... 2,5 mm^2
with wire sleeves	0,25 ... 2,5 mm^2
Noise immunity	EMC tested according to EN 61000-4-2,4,5

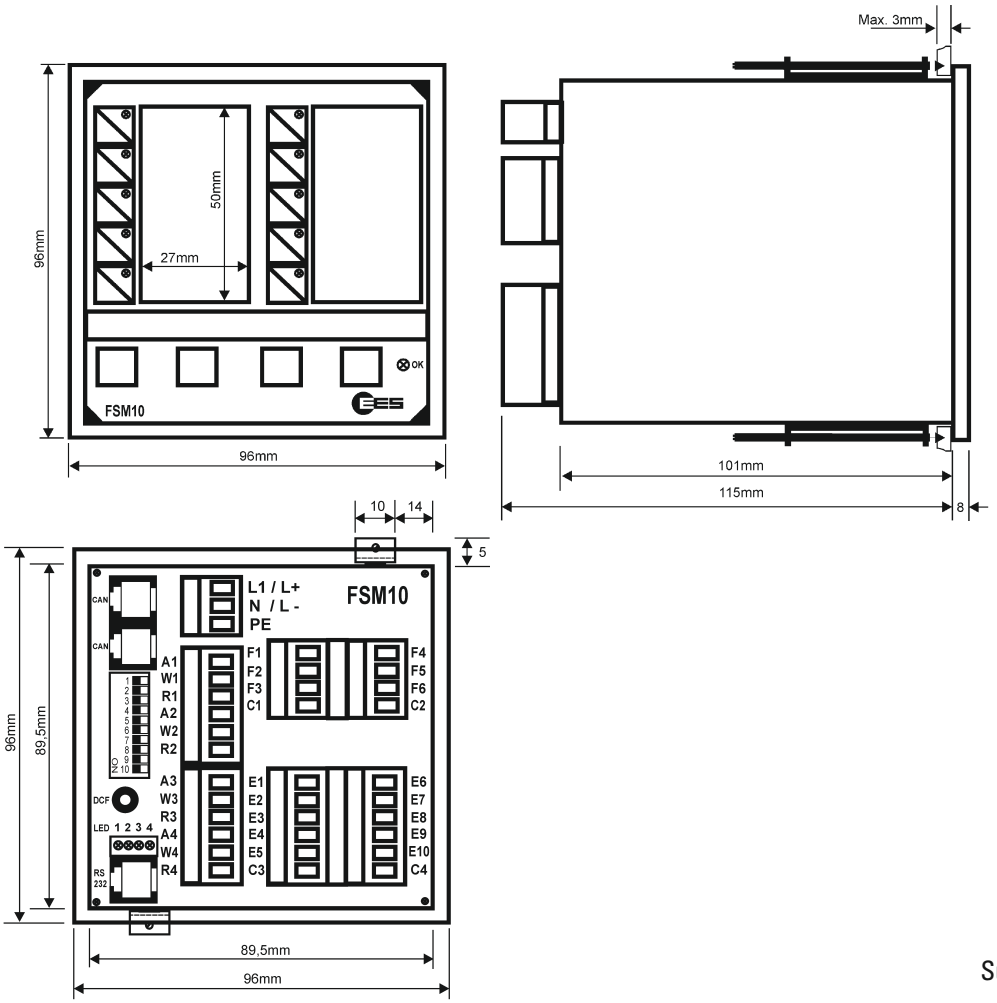
Unless otherwise stated, the specifications for AC voltage refer to a sinusoidal AC voltage with a frequency of 50/60 Hz and all specifications refer to an ambient temperature of 25 °C.

Terminal assignment



The inputs are equipped with bipolar optocouplers and are isolated from the supply voltage. Terminal "C" must be connected to the common reference potential of the group.

Dimensional drawing



Dimensions in mm

Subject to technical changes

Ordering codes

Standard devices

Article number	Type	Supply and signalling voltage
58FSM1000000	FSM 10-12	12 V AC/DC
58FSM1001110	FSM 10-24	24 V AC/DC
58FSM100E330	FSM 10-60	48 V AC/DC and 60 V DC
58FSM1004440	FSM 10-110	110 V AC/DC
58FSM1005550	FSM 10-220	220 V AC/DC

Accessories

Article number	Type	Specification
58ZPK2P/PC	Parameterization cable for MSM family	Cable length 1,5 m
KSH1	Elastic transparent protective cover	IP 65
AN64	DCF77-Active aerial	Cable length 2,5 m
K104	CAN-Bus connection cable	(FSM 10 - FSM 10), Length 20 cm
K104-3	CAN-Bus connection cable	(FSM 10 - FSM 10), Length 50 cm

For additional accessories and further information, please refer to the corresponding product groups in-- our catalog.

Do you need any alternative fault annunciating systems?

BSM / USM - Panel-mounted fault indicator

- Versions with 8, 16, 24, 32, 40 and 48 signal inputs
- Combination of several devices to form a fault annunciating system with up to 192 alarms possible
- Closed front surface, RGB-LED, protection class IP 54
- Integrated buttons, function inputs and relay outputs
- Self-monitoring and status storage in the event of power failure
- Optional
  - Integrated repeat relay or DIN rail modules for output contacts per alarm
  - Software parameterization via PC
  - Redundant voltage supply
- USM
  - Communication interfaces acc. to Modbus RTU/TCP, IEC 60870-5-101/104, IEC 61850, SNMP or Syslog
  - Integrated user management and event recorder
  - IT-Security according to BDEW guidelines
  - Parameterization of all functions via the integrated web server parameter import via Excel template possible
  - Optional analog inputs with limit value formation and transmission of the values via interface

Contact

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