Panel Mounting Fault Annunciator Series

BSM / USM - Panel-mounted fault annunciator

› Annunciators for panel mounting with 8, 16, 24, 32, 40 and 48 signal inputs
› Cascading of multiple devices to an annunciating system with up to 192 alarms possible
› Integrated push buttons, function inputs, function relays, self-monitoring
› Internal generation of the signalling voltage optional
› Storing of process image in event of power failure, BSM-P and USM with integrated horn
› Very bright RGB LED with large reading angle and slide-in pockets for individual labelling of LED and buttons
› USM with
  · Communication interface according to Modbus RTU/TCP, IEC 60870-5-101/104 or IEC 61850, SNMP or Syslog
  · Integrated user administration and event recorder
  · IT security according to BDEW whitepaper
  · Parameterisation of all functions via integrated web server
  · Parameter import from Excel templates is possible
  · Connection to external displey modules is possible
› Optional:
  · Integrated 1:1 relays or DIN rail modules to forward individual alarms
  · Redundant power supply available in 2 voltage ranges
  · USM: Analog and temperature inputs with threshold monitoring and transmission of the values via interface

Datasheet

22.07.2025

General system description - annunciator variants

The fault annunciator is available in three different categories:

- BSM-C: Basic version (starting from version 3.4)
- BSM-P: Software-parameterisable version (starting from version 3.4)
- USM: Annunciator with communication interfaces (from version 4.5)

This description corresponds to the specified version. Earlier versions may contain different or fewer functions.

The fault annunciators are offered with 8, 16, 24, 32, 40 or 48 signal inputs. The signal inputs are combined in groups of 8 alarms each. Each group is assigned to an slide-in pocket for individually created labeling strips. The closed front panel includes 4 buttons, 3 status LEDs and one RGB LED for each signal for which the 6 colour variants (red, green, yellow, blue, orange and white) can be parameterised.

On the BSM-C, the functions horn acknowledgement, alarm acknowledgement and lamp test are permanently assigned to the buttons. On the BSM-P and USM, these can be freely parameterized.

The function inputs are used according to the chosen alarm sequence (e.g. external acknowledgement). The integrated function relays are realized as change-over contacts. They are used for alarm specific functions (e.g. collective report or triggering of an external horn or bell) as well as for signaling of malfunction through an alive-contact.

The fault annunciator has a **status memory** for power failure. If the supply voltage fails, all visual and acoustic signals are switched off and the relays de-energized. During power failure, no new signals are registered and acknowledgements are not possible. After return of the supply, all conditions are immediately reactivated and the fault annunciator is ready for interactions and new alarms.

Many energy plants work unmanned at times and only in case of maintenance or faults, someone is there on site. For this purpose, two special functions have been integrated into the fault annunciator, which are indicated as an additional operating mode by green flashing of the Alive-LED.

- **Mute function:**

The horn is not triggered or automatically acknowledged after a parameterizable time if a parameterized button or a parameterized function input is pressed or activated.

- **Unmanned:**

The fault annunciators can be switched between manned and unmanned station operating modes. In unmanned station mode, LEDs for displaying the alarms are switched off and the alarm acknowledgement on the fault annunciator is deactivated at all.

Two methods can be used to not only display the individual fault alarms via LED, but also to forward them in parallel to the input or output via relay contact (1:1 relays):

1. Integration of additional relay cards (8 NO contacts each) for use as repeat output. For parameterisable annunciators, these relays can be freely assigned. The relay cards are available as an option and have to be considered respectively when ordering.

2. Connection of external relay modules through CAN-Bus interface. Further details to these expansion modules can be found in the separate datasheet MSM-EM-DB-UK.

Further explanations to the implemented alarm sequences of the devices can be found in separate document “Description of alarm sequences” (document name SM-MA-ZI-UK).

BSM-C: Basic version

In the basic version, configuration of the annunciator is done by DIP-switches. The following settings can be done:

- Alarm sequence (first-up, no-first-up or operation indication)
- NO- or NC-principle of the inputs cardwise (8 inputs)
- Master/slave configuration and assignment of address for cascaded annunciator system
- Horn triggering by subsequent alarms

The function inputs, push buttons and function relays have the following fixed functions:

- Function input 1 - external horn acknowledgement
- Function input 2 - external acknowledgement
- Function input 3* - external lamp test
- Function input 4* - mute function
- Button 1 - horn acknowledgement
- Button 2 - acknowledgement
- Button 3 - lamp test
- Button 4 - no function assigned
- Relay 1 - collective report 1
- Relay 2 - no function assigned
- Relay 3 - external horn
- Relay 4 - watchdog-contact

*The function inputs 3 and 4 are not available with the BSM 08.

The BSM-C has a **horn function** that controls an external horn via relay 3.
An internal horn is not available.

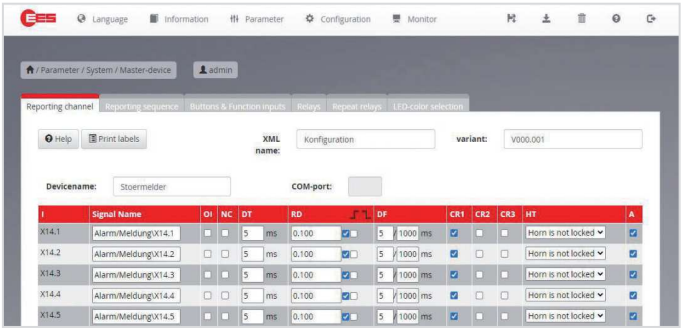
Default Settings

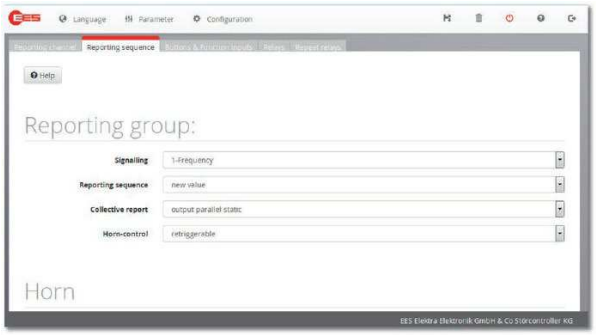
- Collective report - static / parallel to output
- Horn - retriggerable by subsequent alarm and manual acknowledgement
- Horn lock - none

A system bus is available at the two CAN bus sockets to which relay extension modules can be connected or which are used to set up a cascaded alarm monitoring system - see section Cascading.

BSM-P: Software parameterisable version

Furthermore to the characteristics and interfaces of the basic version mentioned above, the BSM-P features an internal horn and a USB-interface (socket type B) which is used as service, diagnostic and parameterisation interface (SDP). This interface enables the parameterisation via PC software. Therefore, in addition to the possibility of configurations via the DIP switch or the functional buttons, numerous further application-specific setting options are available.





1. Channel-specific parameters (separate setting possible for each signalling channel)

- Signal name (labelling)
- Operation indication (status indication) or fault annunciation
- NO- or NC-principle for each signal input
- Debouncing delay
- Alarm delay
- Defluttering
- Possible assignment to collective reports 1, 2 or 3
- Horn triggering (none, with or without lock see section horn triggering below)

2. Alarm sequence (can be composed of the following components)

- First-up or no-first-up alarm
- 1- or 2-frequency-flashing or status indication

3. Unmanned operation

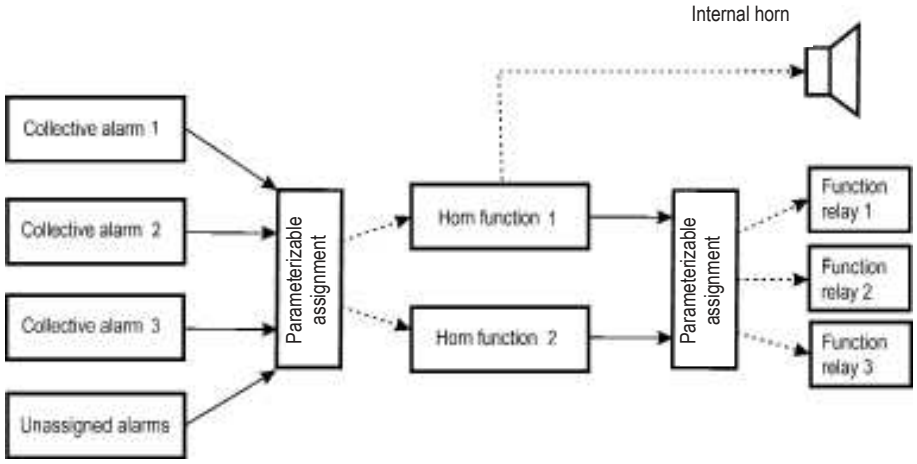
Function	Effects
Mute function (Mute)	The horn is not triggered or automatically acknowledged after a parameterizable time if a button or a parameterized functional input is pressed or set active.
Unmanned operation (Unmanned)	The fault annunciators can be switched between manned and unmanned station operating modes. In unmanned station mode, LEDs for displaying the alarms are switched off and the alarm acknowledgement on the fault annunciator is deactivated at all. The horn is switched off as well.

4. Forming of collective alarms

Function	Procedure
static / input-parallel	The collective report is set with the first incoming alarm and resets with the last receding alarm.
static / output-parallel	The collective report is set with the first incoming alarm. Once all alarms have receded **and** been acknowledged, the collective report is reset.
static / dynamic / input-parallel	The collective report is set with the first incoming alarm. For each subsequent alarm, the collective report is reset for approx. 0.8 s and then set again. Once all alarms have receded, the collective report is reset permanently.
static / dynamic / output-parallel	The collective report is set with the first incoming alarm. For each subsequent alarm, the collective report is reset for approx. 0.8 s and then set again. Once all alarms have receded and been acknowledged the collective report is reset permanently.
dynamic	The collective report is activated for approx. 0.8 s with each incoming alarm.
static / input-parallel / resettable	The collective report is set with the first incoming alarm and resets with the last receding alarm or when acknowledged.
static / output-parallel / resettable	The collective report is set with the first incoming alarm. With acknowledgement of the alarm, the collective report is being reset –independently from the state of the signal at the alarm input.

5. Horn triggering

BSM-P and USM have 2 horn functions. The parameterization can be used to define which group alarms or non-grouped alarms control the respective horn functions. In a second step it can be set which relay is controlled by a horn function. Additionally it can be parameterized whether the horn function 1 controls the internal horn.



For the horn function the following parameters are settable:

Function	Option	Description
Horn control (valid for both horn functions)	Retriggerable	The horn is triggered again with the next alarms, even if alarms are already pending.
	Not retriggerable	The horn is only activated again for subsequent alarms if no alarms are pending.
Internal horn	Active	Internal horn activated for horn function 1.
	Inactive	Internal horn deactivated.
Horn priority acknowledgement (for both horn functions separately adjustable)	Active	The alarm can only be acknowledged after the horn has been has already been acknowledged.
	Inactive	Alarm can always be acknowledged.
Horn acknowledgement (for both horn functions separately adjustable)	Manually	Horn is acknowledged manually via push button or function input.
	Automatically	Horn is automatically acknowledged after the set time.
Horn muting (for both horn functions separately adjustable)	Horn is not triggered when muted not triggered	If the mute function is activated, the horn will not sound is not triggered despite the condition.
	Automatic acknowledgement	If the mute function is activated, the horn will be automatically acknowledged after the set time.
Horn activation (for each alarm separately adjustable)	No horn activation	Alarm doesn't trigger a horn.
	Horn without interlock	The horn is activated with every alarm and can always be acknowledged.
	Horn with interlock	The horn is activated with every alarm and can only be acknowledged after the alarm acknowledgement.

In case of conflicts between the settings for horn activation and horn priority acknowledgement, the setting for the horn priority acknowledgement setting that is valid for all alarms always prevails.

In addition, the mute function can be used. After activation of this function by a parameterized button or a parameterized function input, the horn is not triggered or is automatically acknowledged after a parameterizable time. Furthermore, the horn control is deactivated in the "Unmanned operation" state.

6. Buttons and functional inputs

The following functionalities are assignable for the **4 buttons and 4 functional inputs**.
Multiple assignments are possible:

- Acknowledgment alarms group 1,2, 3 or unassigned alarms
- Reset Group*) 1, 2 , 3 or unassigned alarms
- Acknowledgement Horn
- Lamp test
- Function test
- Mute function
- Unmanned operation

Factory settings:

- Button 1 - Acknowledgement horn 1
- Button 2 - Acknowledgement alarms group 1
- Button3 - Lamp test
- Button 4 - Not assigned
- Function input 1 - External horn acknowledgement
- Function input 2 - External acknowledgement
- Function input 3* - External lamp test
- Function input 4* - Mute function

* Function inputs 3 and 4 are not available on the BSM 08.

A group is formed by all the alarms that are included in the same collective report. Unassigned inputs are those alarms that are not assigned to a collective report.

7. Functional relays

3 of the in total 4 functional relays can be assigned with functions. The 4th relay is fixedly designed as a live relay. Multiple assignments are possible:

- Collective alarm 1,2 or 3
- Triggering of external horns through horn function 1 and / or 2
- Control of relays by a functional input
- Triggering through one of the buttons 1 … 4
  (statistically, as long as a button is pressed or as a bistable relay, toggles on each pressing of a button)
- Inversion of the relay function is possible

Werkseinstellung:

- Relay 1 - Collective alarm 1
- Relay 2 - Not assigned
- Relay 3 - External horn (horn function 1)
- Relay 4 - Live contact

8. Modbus RTU Interface

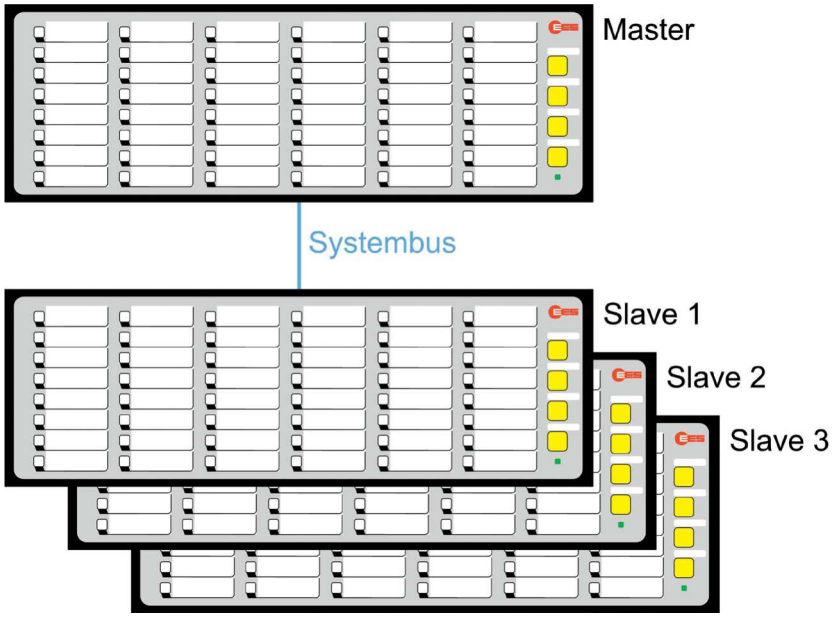
The BSM-P can be optionally equipped with a Modbus RTU interface. The serial connection is made either via RS232 or RS485. The BSM-P is a Modbus slave and can both transmit statuses via the interface to higher-level control systems and be controlled by third-party devices, provided that these act as Modbus masters.

Cascading

With the cascading functionality up to four devices can be grouped to an annunciating system by connecting the devices via the systembus provided at the CAN-Bus sockets. One device works as “master” and the connected devices work as “slave”. Thus systems with up to 192 signal inputs (4*48) can be realized. Thus, the connected devices will be processing as a virtual compound annunciator with common signalling (alarm sequence, forming of collective reports and horn triggering).

Acknowledgement as well as output of the collective reports and horn triggering can arbitrarily be assigned to any of the buttons or relays respectively of the compound system. As slave devices within a cascaded system, annunciators of the type BSM-C or BSM-P can be used. MSM-relay-modules cannot be connected to cascaded annunciators.

Basic structure of a cascaded fault annunciating system



The parameterisation is done completely via the browser-based software. The parameter adjustment of cascaded fault annunciator devices is only carried out completely in the "Master fault annunciator" and is then automatically distributed to the "Slave fault annunciator". Due to the cascading, the number of function inputs is multiplied according to the number of units. A maximum of 16 function inputs are available.

USM: Universal annunciator with protocol interfaces

The USM resembles the BSM-P in general functionality. For communication with superior or inferior systems (e.g. SCADA or control) the USM is equipped with diverse interfaces. The following interfaces are available:

Standard interfaces:

- 1st network interface LAN - Ethernet / RJ45
  (Protocol as well as diagnostic and parameterisation interface)
- COM - parameterizable RS232 or RS485 / pluggable terminal (serial protocol interface)
- USB-C factory interface (service interface)
- USB-C interface (currently not used)
- CAN-Bus / RJ45 (System bus for connecting expansion modules, external display modules or setting-up alarm cascades see also section Cascading)

Second network interface (optionally)

- LAN - Ethernet / RJ45 (Protocol interface as well as diagnostic and parameterisation) alternatively
- Optical interface multimode 50-62.5 / 125 µm @ 1300 nm; Connector LC-duplex (according to standard IEC 60874-13) (protocol interface)

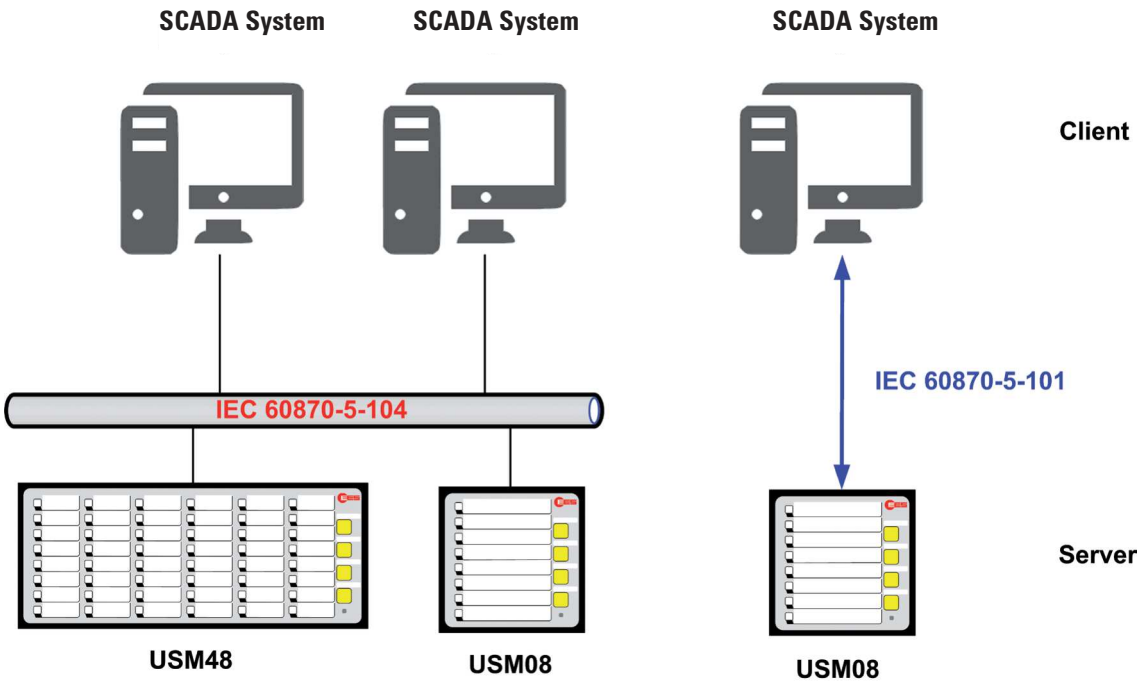
1. Protocol interfaces

With the help of these interfaces, the annunciators can be connected to third party systems by use of the following protocols:

- Modbus RTU/TCP (annunciator is Modbus-slave)
- IEC 60870-5-101 (annunciator is IEC-server)
- IEC 60870-5-104 (annunciator is IEC-server or client)
- Optionally IEC 61850 (annunciator is IEC-server or client)
- SNMP V1, V2, V3 (transmission of status information and device errors)
- Syslog (transmission to up to 2 syslog servers)

A fault annunciator with the IEC 60870-5-101/104 interface, which is operated as a server, can establish a connection to a maximum of 4 clients (Multilink). It is possible to combine several of the above mentioned protocols in one annunciator. For detailed information on the interfaces, please refer to the respective separate interface descriptions.

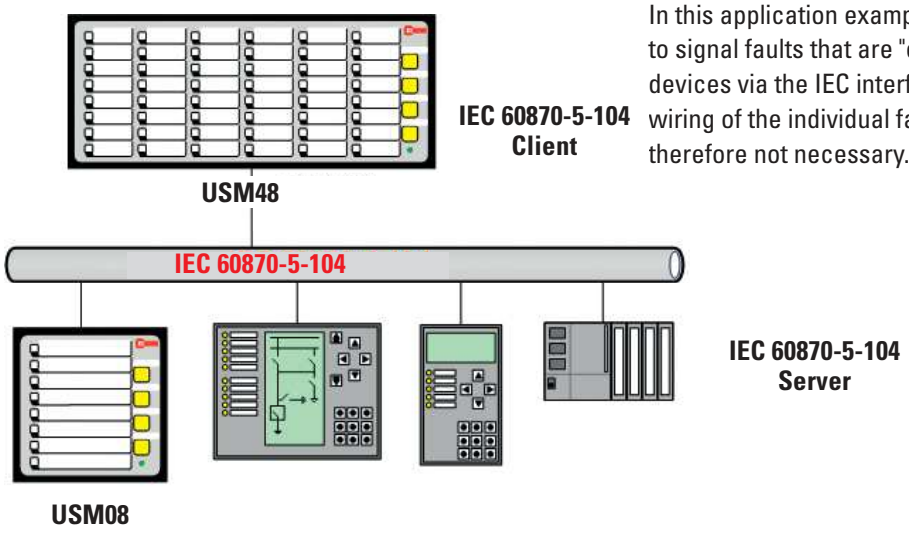
2. Acquisition module



The diagram above shows an application example in which the USMs serve as acquisition modules, processes and signals the alarms on-site. In addition, the alarms are transferred to the control level via IEC 60870-5-101/104 interface.

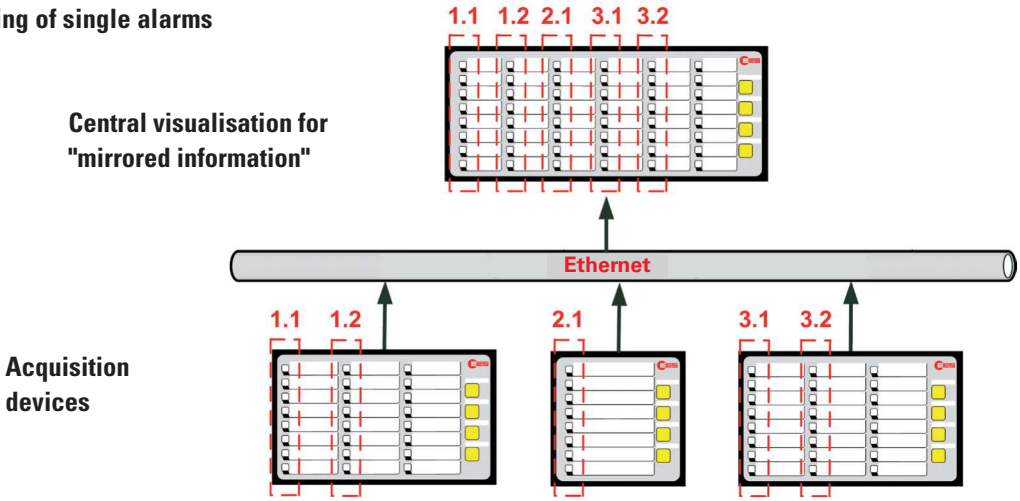
The signalling channels can be controlled alternatively via galvanic input or IEC interface. Which of these two possibilities is used can be parameterized for each individual channel.
Acknowledgement via IEC interface is also possible.

3. USM as indication device



In this application example, the USM48 is used to signal faults that are "collected" by various devices via the IEC interface. An additional wiring of the individual fault alarm contacts is therefore not necessary.

4. Mirroring of single alarms



In larger plant areas and complex processes, important individual states from the field are often required at central points or control rooms. In classical systems, 1:1 relays are used, which means a high amount of wiring. With USM fault reporting systems this effort can be greatly reduced. 32 USM field stations can send and mirror single alarms over a network connection (copper or optical fibre) to a central USM or another USM field station. The mirrored alarms do not have to be individually wired or acknowledged "at the mirror", but are always in the state of the inputs of the triggering USM.

5. Integration into IEC 61850 Bus

The IEC 61850 protocol is used in automated switchgear to transmit information from field and protective devices. In addition, various individual alarms are generated which - depending on the type of alarm - must also be transmitted to the process control system or other devices at the field or station level.

With the aid of the optionally integrable IEC 61850 server, the fault annunciator of the USM series perform this "rag collector" function. That way, individual alarms, with the aid of the optional analog inputs and also measured values can be transmitted. It is easy to configure individual reports and datasets that provide all the relevant relevant information about the message and device status.

Data is exchanged accordingly:

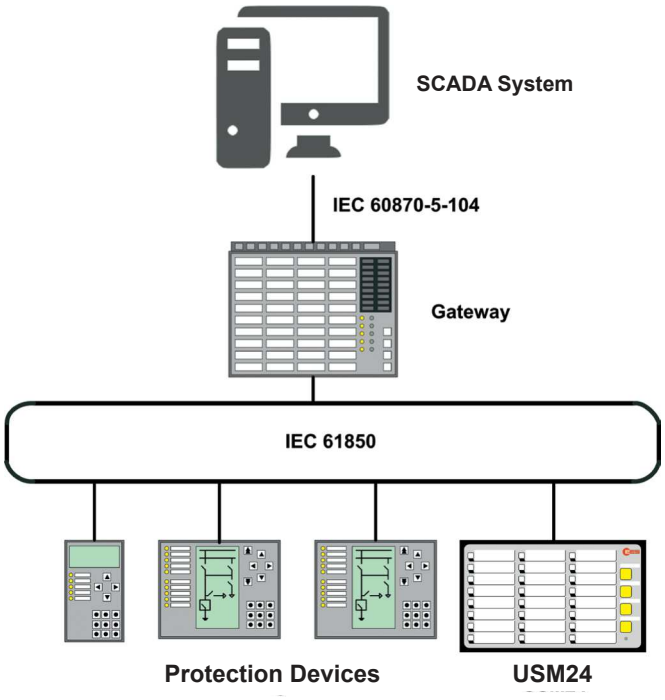
- MMS via GGIO (USM is server)
- GOOSE (USM is server or client)

GOOSE Implementation

In accordance with the IEC61850 standard, the USM can send GOOSE alarms both as a publisher - i.e. as a server - and as a subscriber - i.e. as a client. The reading of CID files from third-party devices and the generation of the USM CID files takes place on the web interface of the USM. Received GOOSE signals can either be routed directly to fault alarm channels or preprocessed using Boolean logic. Up to 1024 alarms from up to 32 IEDs can be processed.

Watchdog

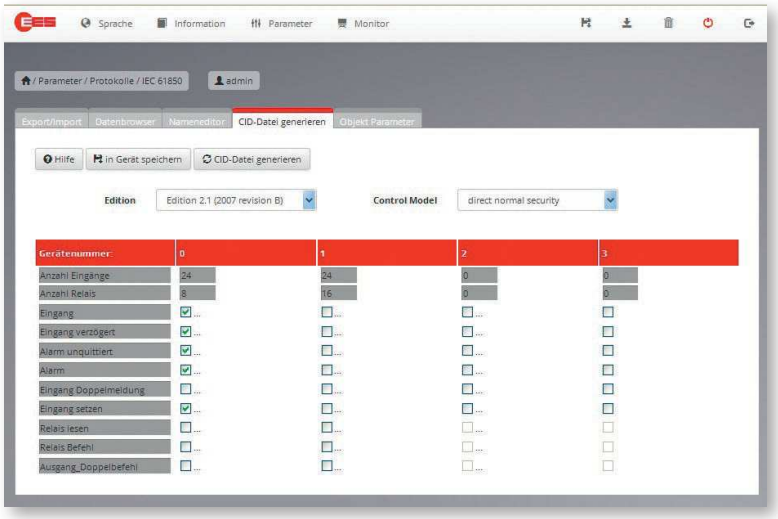
In addition, the USM can be configured as a 61850 watchdog for third-party devices. Hereby, a configurable time is monitored in which the third-party device must periodically report to the USM via a 61850 object. If the time is exceeded, a freely assignable digital input is activated.



- With the optionally available software license IEC 61850 the USM can be integrated into IEC 61850 structures.
- The signal channels can be controlled alternatively via the galvanic input or the 61850 interface. Which of these two options is used for each individual channel can be parameterized. Acknowledgement via the 61850 interface is also possible.

6. CID-Creator

Every annunciator of the series USM provides numerous information about the status of the in- and outputs as well as the device status on the communication interface by default.



Some applications require only a subset of the available information, e.g. on the IEC 61850 Bus. The CID-creator offers the possibility to select the information which is of interest in advance. Thus, the CID-file of the annunciator only contains the required and relevant information for the respective application. By creating the file, you can choose between editions 1.0, 2.0 and 2.1 of the IEC standard.

7. Integrated Web-Server

The USM has an integrated web server. The parameterisation can be done via network using all common web browsers. All fault alarm and interface parameters are available by web server and can be parameterised via it. Additional parameterisation software or special parameterisation cables are not required. Parameters from previous-generation devices can be imported and processed in the same way as manually completed Excel templates or Excel files converted into this format from other lists. This saves time and reduces the causes of errors during fault annunciator parameterization.

Service access and an online monitor of the fault annunciator are also part of the functional scope of the web server.

8. Integrated logic functionality

The fault annunciators of the USM series offer integrated logic functionality. With the universal parameter editor formulas can be created according to the syntax of IEC61131-3 ST. Here inputs and virtual channels are linked in Boolean expressions with the operators AND, OR, NOT and parentheses.

In the following example, Goose signals that were assigned to a virtual channel in a previous configuration step are linked to form a signal. The result of this link is routed to a fault signal input of the USM and thus processed like a normal physical input in the fault signal logic.

Example:
%QX0.0.1:= (%IX14.1 AND %IX14.2) OR (%IX14.3 AND %IX14.4)

Control of the fault signal input of the master USM channel 1 according to the result of the operation (virtual channel 1 AND virtual channel 2) OR (virtual channel 3 AND virtual channel 4).

For more detailed information on the logic functionality, please refer to the operating manual of the USM.

9. IT Security according to BDEW guidelines

For the companies in the energy industry, a white paper with basic security measures for control and telecommunication system management was developed. The goal is to adequately protect the systems against security threats in daily operations. To fulfill the BDEW Whitepaper 2.0 05/2018 standard, the following functions have been added or extended:

- User administration
  (In the delivery state, only one administrator with a unique, device-specific initial password is created)
- Firewall settings
- Certificate administration
- File transfer via SFTP (Secure File Transfer Protocol)
- Communication using HTTPS (Hypertext Transfer Protocol Secure)
- If two Ethernet interfaces are available, services can be assigned to both interfaces via the port selection (e.g. productive network and service network).
- Update and rollback function

In addition, the optional Port Security extension can be integrated, which allows authentication of the annunciator according to the IEEE 802. 1X protocol. (Subject on availability)

10. User administration

The fault annunciator has a user administration, which allows the creation of users within groups with different access rights:

admin	Administrator Authorized for user administration, firmware updates, security settings.
user	User Authorization to view, but not change, non-security settings.
engineer	Engineer Authorized to parameterize all non-safety-related settings of the fault annunciator.
operator	Operator Authorized to control the device functions via the online monitor.

Optional password rules can be activated with complexity policies and validity period.

11. Event recorder

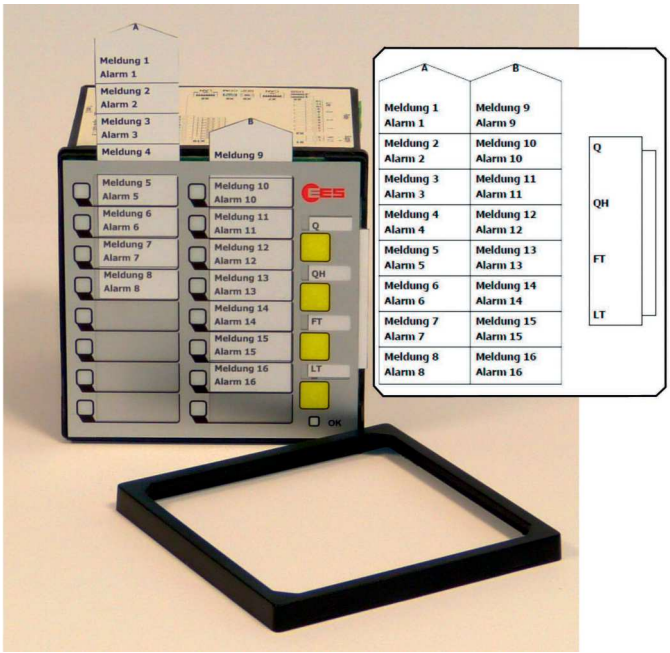
With the USM, an event recorder is being maintained, in which the following kinds of events with consecutive event number and time stamp can be archived:

- Alarm events including acknowledgement
- System error alarms including connection and disconnection of the power supply
- Events of the protocol interface
- Security relevant events

It's up to the user to decide which event categories are supposed to be recorded in archive.
The protocol can be displayed on the web server and exported as a CSV file or sent as a Syslog alarm.
The event recorder is managed as a ring buffer and can hold up to 100,000 alarm. If the alarm log overflows, an error alarm is output as standard (parameterizable).

In the delivery state, only the system relevant part of the event recorder is active. The logging of alarm events needs to be activated manually. A warning at a parameterizable filling level can be generated as well.

Labelling



Labelling of the annunciator is done by means of designation strips that can be inserted beneath the cover foil after removing the front frame.

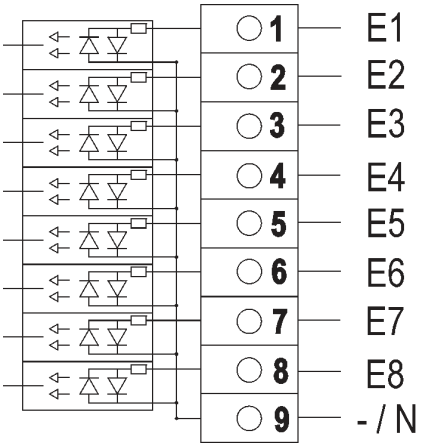
The designation strips with signal names can be created and printed directly from the parameterisation interface or generated manually from labelling strips in Word-format. Hereby, fonts and font sizes can be adapted individually.

Equipment Options

The modular design of the fault indicators allows them to be supplied in a wide range of configurations and with numerous options.

1. Input relays for signal inputs

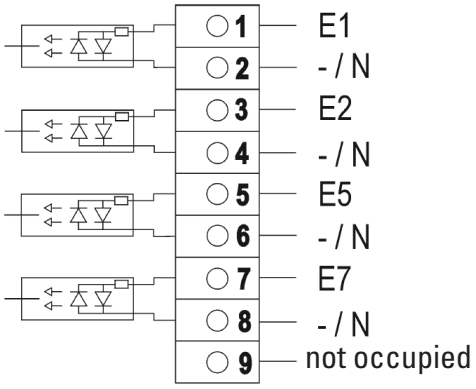
1.1 Input card with 8 rooted inputs



The fault annunciators are available with 8, 16, 24, 32, 40, and 48 channels as standard. The input cards have 8 rooted inputs. These 8 inputs are referred to as a signal group.

Standard for BSM-C, BSM-P and USM

1.2 Input card with 4 potential free inputs



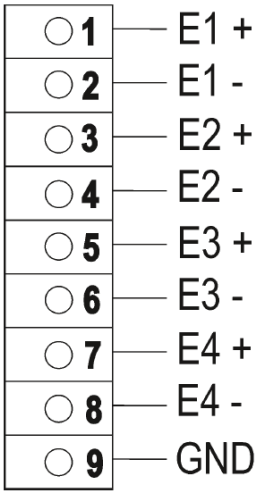
In some applications, however, a grounded version of the inputs is not practical. Alternative input cards with 4 potential-free inputs can therefore be used. The signal group then consists of 4 inputs. The remaining channels reserved for this card can no longer be used. This reduces the total number of signal channels of the fault indicator.

Option for BSM-C, BSM-P and USM

2. Additional cards

Optional analog input cards, cards for connecting PT100/PT1000 sensors, and relay cards can be integrated into the fault indicator. Mixed use of the individual card types is also possible. Please refer to the matrix with the order designations further back in the data sheet for the possible combinations.

2.1 Analog input cards



Depending on the size of the device, a USM can be equipped with up to 5 analog input cards. Each input card has 4 analog inputs that share a common reference ground. The inputs can be configured as voltage or current inputs depending on the application. The following options are available:

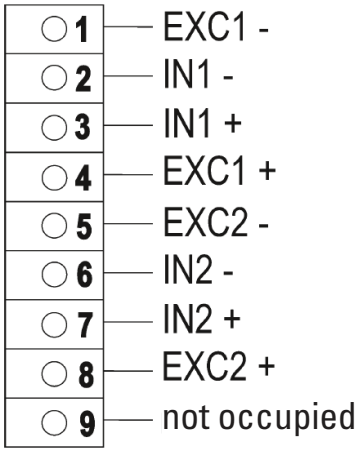
- 0 … 10 V
- -10 … 10 V
- 0 … 20 mA
- 4 … 20 mA (with wire break monitoring in the fault indicator)

Option for USM

The measured values can be forwarded to a higher-level system via Modbus, IEC 60870-5-101/104, or IEC 61850 interfaces. Furthermore, the measured values can be monitored and a fault message generated in the event of a fault. This alarm can be parameterized so that it is triggered in the event of one of the following events:

- when the limit value is exceeded
- if the value falls below the limit value
- when the measured value is within a range
- when the measured value is outside a range

2.2 Input card for temperature sensors



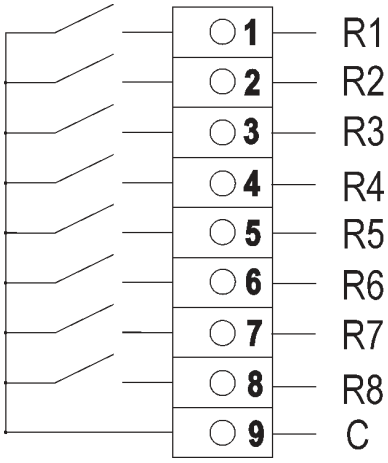
Instead of an analog input card, a card for 2 PT100 or PT1000 temperature sensors can also be used. Sensors in 2-, 3-, or 4-wire technology can be connected.

Option for USM

The measured values can be forwarded to a higher-level system via the Modbus, IEC 60870-5-101/104 or IEC 61850 interface. Furthermore, the measured values can be monitored and a fault alarm generated in the event of a fault. This message can be parameterized so that it is triggered in the event of one of the following events:

- when a limit value is exceeded
- if the value falls below the limit value
- when the measured value is within a range
- when the measured value is outside a range

2.3 Relay cards (8 relays)



The relay cards (each with 8 normally open contacts) are independent of the 4 function relays of the fault indicator.

The eight relays on each plug-in card have a common root.

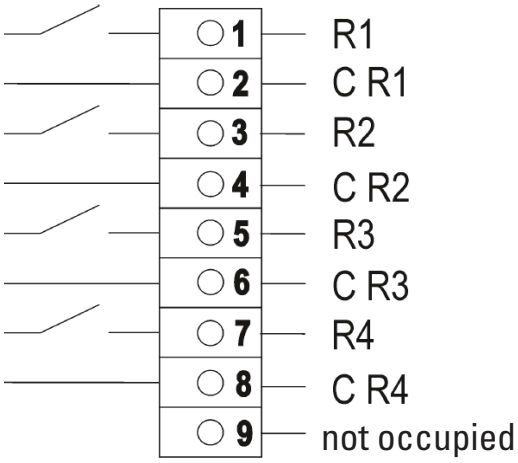
Option for BSM-C, BSM-P and USM

The relays can be used as 1:1 relays for parallel multiplication and forwarding of individual messages directly from the fault indicator without connecting external relay modules. With the BSM-C, the assignment is made in groups to the input groups.

With the BSM-P and USM, the control and function of the relays can be individually customized for each fault indicator using the parameterization software or the integrated web server. You can freely select which input the respective relay follows; the assignment can be 1:1 (one relay follows one input) or n:1 (several relays follow one input). Special functions such as horn control or output of a collective alarm can also be assigned to these relays. Additional parameters are available, e.g., signal inversion and the wipe duration for pulse output.

On the USM, these relays can also be controlled via the IEC interface.

2.4 Relay cards (4 relays)



The function of this card corresponds to the description above, except for the lower number of relays. The normally open contacts of these relays do not have a common root, but can be controlled separately.

When used as 1:1 relays, they are permanently assigned to inputs 1 - 4 of a signal group on the BSM-C. With the BSM-P and USM, the assignment can also be made individually.

Option for BSM-C, BSM-P and USM

2.5 Equipment of annunciators with additional cards

The maximum number of cards (analog input cards, input cards for temperature sensors, or relay cards) that can be additionally integrated into a fault indicator is specified as follows:

BSM / USM 08	1 additional card
BSM / USM 16 (in wide housing)	2 additional cards
BSM / USM 24	3 additional cards
BSM / USM 32	2 additional cards
BSM / USM 32 (in wide housing)	4 additional cards
BSM / USM 40	5 additional cards
BSM / USM 48	2 additional cards

BSM 16 and USM 16 with additional cards are supplied in wide housing with front frame size (H x W [mm] 96 x 192). BSM 32 and USM 32 with 4 additional cards are also supplied in wide housing (H x W [mm] 96 x 287). If you have any questions, please do not hesitate to contact our service team.

The terminals of the individual card groups are color-coded for easy identification.

Supply voltage 24 and 60 V	green
Supply voltage 110 or 220 V	orange
Signal inputs	black
Function relays and relay cards	green
Analog inputs	blue
Inputs for temperature sensors	blue

The combination of additional cards results in a wide variety of fault indicators. The following table shows the possible variants and the corresponding terminal block assignments. The abbreviations in the corresponding columns have the following meanings.

E	**- Signal inputs**
R	**- Relays**
A	**- Analog inputs**
T	**- Temperature inputs**
Empty field	- terminal block not equipped

Column 2 “Ref. Pos. 10” represents the coding of the additional card equipment in the 10th digit of the article number (see also section Order designation). A double entry here means that the fault indicators are manufactured with both analog inputs and temperature inputs. For example, the device in line 9 can be manufactured in two versions.

59UA11SW0R500	X30 - Analog inputs	and	X32 - Relays
59UA11SW0RB00	X30 - Temperature inputs	and	X32 - Relays

Type	Name Pos.10		Alarm inputs						Additional cards				
		X10	X12	X14	X16	X18	X20	X30	X32	X34	X36	X38	X40
BSM/USM-08	0	E											
BSM/USM-08	R	E						R					
USM-08	A/T	E						A/T					
BSM/USM-16	0	E	E										
BSM/USM-16W	1	E	E						R				
BSM/USM-16W	R	E	E					R	R				
USM-16W	3/8	E	E						A/T				
USM-16W	A/T	E	E					A/T	A/T				
USM-16W	5/B	E	E					A/T	R				
BSM/USM-24	0	E	E	E									
BSM/USM-24	1	E	E	E						R			
BSM/USM-24	2	E	E	E					R	R			
BSM/USM-24	R	E	E	E					R	R			
USM-24	3/8	E	E	E						A/T			
USM-24	4/9	E	E	E					A/T	A/T			
USM-24	5/B	E	E	E					A/T	R			
USM-24	6	E	E	E				A	R	R			
USM-24	E	E	E	E				T	R	R			
USM-24	D	E	E	E				A	T	R			
USM-24	7/C	E	E	E				A/T	A/T	R			
USM-24	A/T	E	E	E				A/T	A/T	A/T			
BSM/USM-32	0	E	E	E	E								
BSM/USM-32	1	E	E	E	E						R		
BSM/USM-32	2	E	E	E	E					R	R		
USM-32	3/8	E	E	E	E						A/T		
USM-32	4/9	E	E	E	E					A/T	A/T		
USM-32	5/B	E	E	E	E					A/T	R		
USM-32W	A/T	E	E	E	E			A/T	A/T	A/T	A/T		
BSM/USM-32W	R	E	E	E	E			R	R	R	R		
BSM/USM-40	0	E	E	E	E	E							
BSM/USM-40	1	E	E	E	E	E						R	
BSM/USM-40	2	E	E	E	E	E					R	R	
BSM/USM-40	R	E	E	E	E	E		R	R	R	R	R	
USM-40	3/8	E	E	E	E	E						A/T	
USM-40	4/9	E	E	E	E	E					A/T	A/T	
USM-40	5/B	E	E	E	E	E					A/T	R	
USM-40	A/T	E	E	E	E	E		A/T	A/T	A/T	A/T	A/T	
BSM/USM-48	0	E	E	E	E	E	E						
BSM/USM-48	1	E	E	E	E	E	E						R
BSM/USM-48	2	E	E	E	E	E	E					R	R
USM-48	3/8	E	E	E	E	E	E						A/T
USM-48	4/9	E	E	E	E	E	E					A/T	A/T
USM-48	5/B	E	E	E	E	E	E					A/T	R

Terminal assignment of the fault indicators in the different equipment variants

3. Redundant power-supply

Independent from the primary power supply of the device a second, redundant power supply can be integrated into the fault annunciator. Two different voltage variants are available:

- 24 – 60 V AC/DC
- 110 – 220 V AC/DC

The voltage level of the redundant power supply can be chosen independently from the voltage level of the primary power supply.

If BSM or USM annunciators are equipped with a redundant power supply, switching between the the power supplies goes on automatically without interruption. The primary power supply (S1) is preferrably used by the annunciator. If no voltage is applied to S1, the system automatically switches to the secondary power supply (S2). If the voltage S1 returns, the primary power supply is also automatically used again.

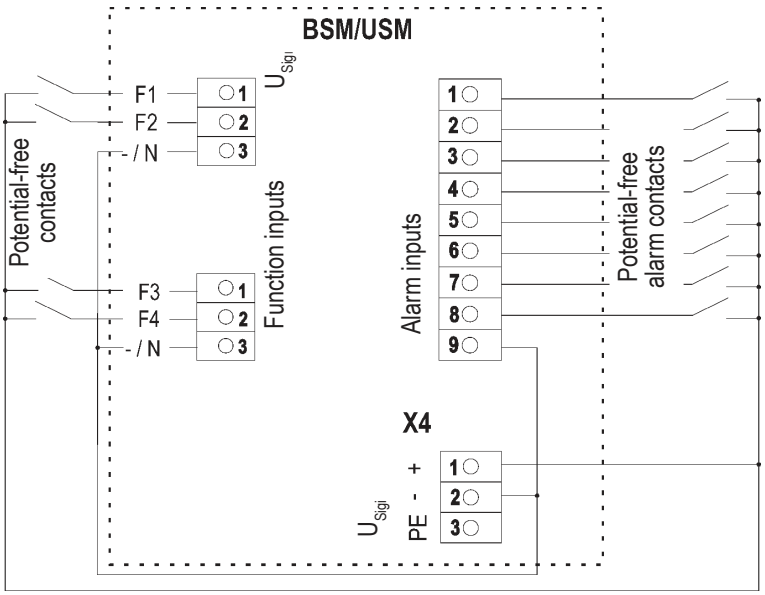
Both power supplies can be operated with AC or DC voltage. A definition is not necessary.

Both primary and redundant power supplies are included in the self-monitoring of the annunciator and any malfunctions are signalized on the watchdog-contact and the OK-LED. Additionally, the application of the supply voltage for both power supplies is indicated by a LED each on the rear side of the device. For the annunciators of the series USM the breakdown of a power supply is also transmitted on the communication interface.

4. Internally generated signal voltage

With both the BSM and the USM, it is possible to generate a 24 V DC signal voltage in the fault annunciator itself with the option "Signal voltage generated internally", which can then be used to supply the potential-free signal contacts or to control the function relays. If this option is used, the signalling and function inputs are automatically designed for 24 V.

This option is particularly interesting if redundant power supplies are used, since the 24 V signal voltage is then generated without interruption from the respective active operating voltage U_{S1} or U_{S2}.



Application example for the use of the internally generated signalling voltage U_{Sigi}

5. Universal Display Module UDM (for USM only)

The UDM is a display for flexible visualization and monitoring of digital and analog values and temperatures on the USM using individually configurable widgets. It is connected to the fault indicator via a patch cable up to 10 m long at the system bus connection. A maximum of 16 displays can be connected to one fault indicator. The UDM can also be connected in a fault indicator cascade or when using external relay modules.

Visualisation of the following elements:

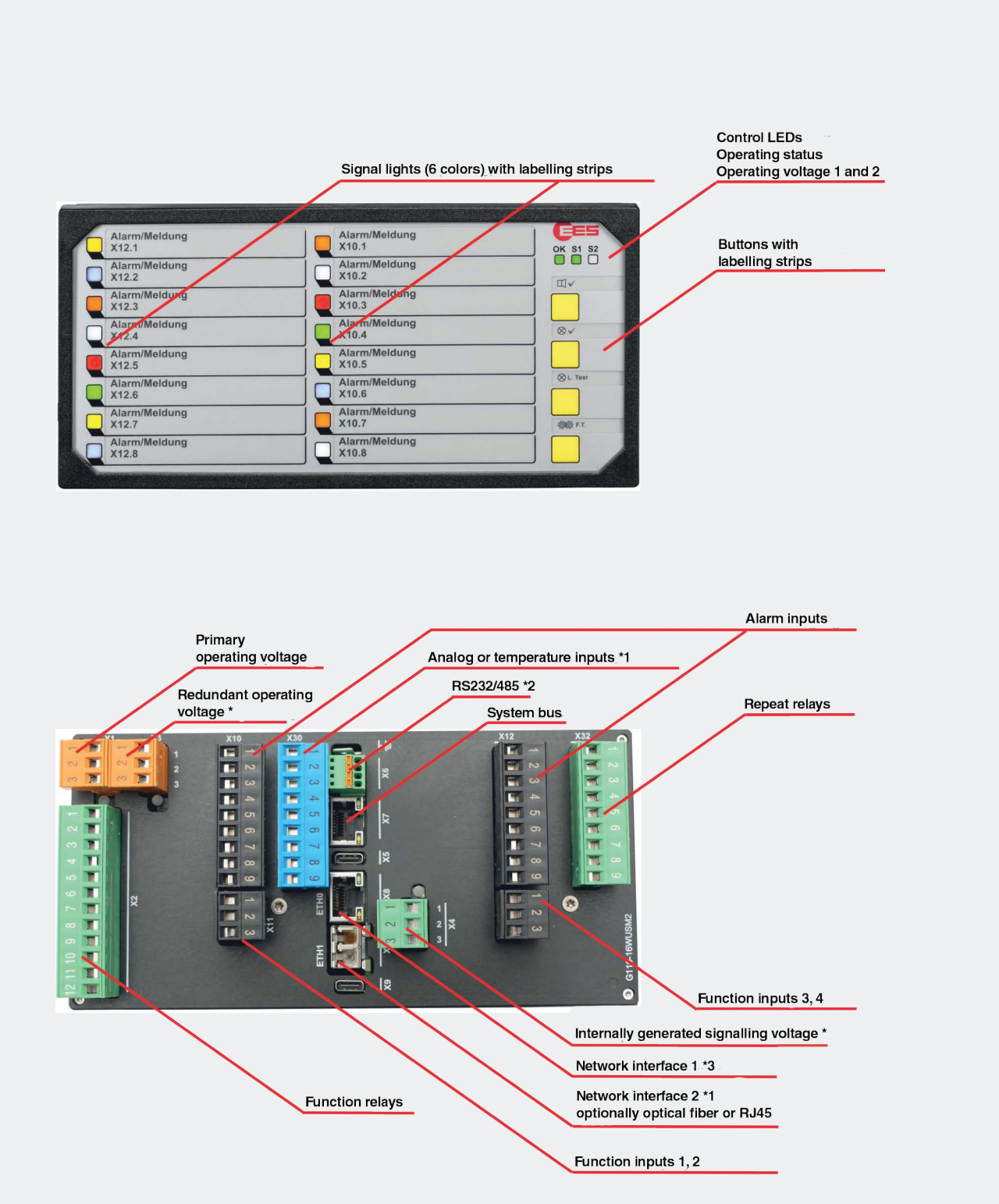
- Individual and collective alarms
- Status of analog and temperature inputs
- Limit violations
- Alarms
- Status of function inputs
- System functions
- Switching states of relays integrated in the fault indicator
- Device errors
- Status of connection to the USM (alive signal)

The connection to the fault indicator is made via a patch cable with a maximum length of 10 m at the system bus connection. By looping the system bus from device to device, a maximum of 16 displays can be connected to one fault annunciator. This also applies if external relay modules are already connected to the USM or a fault indicator cascade has been formed.

Parameterization is carried out using a separate software program that requires a one-time license, which allows the display to be configured using a library of pointer instruments, bar graphs, containers, thermometers, etc.
The texts and sizes can be customized accordingly.

Technical data	
Supply voltage	
Nominal voltage / voltage range	24V DC / 16,8 V … 30 V DC
Nominal voltage / voltage range	110 – 220 V AC/DC / 100 … 370 V DC or 90 … 264 V AC
Housing (W x H) [mm]	144 x 96
Resolution / Display size	800 x 480 px / 5 inch
Displayable pages	16
Maximum number of displayable data points	2048
Protection class	
front side	IP 54
rear side	IP 20
Cut-out (W x H) [mm]	138 x 92
EM compatibility	
Interference immunity	DIN EN 61000-4-2 DIN EN 61000-4-3 DIN EN 61000-4-4 DIN EN 61000-4-5 DIN EN 61000-4-6 DIN EN 61000-4-11 DIN EN 55011

6. Overview of the functions and options



This image is showing the USM

* Option for BSM and USM
*1 Option only possible for USM
*2 Standard for USM, option for BSM-P
*3 Standard for USM, not possible for BSM

Variant comparison BSM-C, BSM-P and USM

	BSM-C	BSM-P	USM
General properties			
Signalling channes 8, 16, 24, 32, 40, 48 available	available	available	available
Function of the buttons	fixed	parameterizable	parameterizable
Effect of the function relay 1 - 3	fixed	parameterizable	parameterizable
Effect of the function relay 4	Live contact	Live contact	Live contact
Internal horn	x	+	+
Connection possibility of external 1:1 relays	+	+	+
Redundant power supply	o	o	o
Internally created signalling voltage	o	o	o
Cascadation	+	+	+
Alternative input cards and additional cards			
Input cards 8 inputs rooted	+	+	+
2-pole input cards, 4 inputs	o	o	o
Relay cards, 8 turnkeys (common root)	o	o	o
2-pole relay cards, 4 turnkeys (potential free)	o	o	o
Analog input cards	x	x	o
Eingänge for PT100 / PT 1000	x	x	o
Functionalities			
Mute function	+	+	+
Unmanned operation	x	+	+
1st horn function	+	+	+
2nd horn function	x	+	+
Collective alarm 1	+	+	+
Collective alarm 2 + 3 + ungrouped alarms	x	+	+
Integrated web server	x	x	+
Logic functionality	x	x	+
IT-Security	x	x	+
User administration	x	x	+
Event recorder	x	x	+
Interfaces and protocols			
1st RJ45 interface	x	x	+
RS232/485 interface	x	o	+
System Bus (based on CAN-Bus)	+	+	+
2nd RJ45 interface	x	x	o
Optical fiber interface LC-socket	x	x	o
Modbus RTU	x	o	+
Modbus TCP	x	x	+
IEC60870-5-101	x	x	+
IEC60870-5-104	x	x	+
SNMP	x	x	+
Syslog	x	x	+
IEC61850	x	x	o
Configuration and parameterization			
Configuration via DIP switch	+	+	x
Parameterization via	x	PC program	Web server
Channel specific parameterization	x	+	+

x not available
+ Standard
o optional

Technical Data

Supply voltage U_S

Key	Rated voltage	Voltage range
1	24 V AC/DC	20…37 V DC or 20…26 V AC
2	48 V AC/DC or 60 V DC	20…73 V DC or 20…51 V AC
5	110 V AC/DC or 220 V AC/DC	85…370 V DC or 85…264 V AC

Signal voltage U_{Sig} = Switching voltage of the function inputs

Key	Rated voltage [V AC/DC]	Threshold for alarm		Maximum permitted voltage [V AC/DC]	Input current per input @ rated voltage [mA]
		Inactive [V AC/DC]	Active [V AC/DC]		
1	24	11	15	50	2,3
3	48	17	25	75	2,1
	60	17	25	75	2,7
E	60	42	54	75	1,6
4	110	35	50	150	1,6
H	125	35	50	150	1,8
5	220	100	140	260	1,2
W	50 - 250	25	45	250	1,6

If not otherwise specified the given information for alternating voltage are referring to a sinusoidal alternating voltage with a frequency of 50/60 Hz.

Internally generated signalling voltage U_{Sigi}	
Output voltage	24V DC +/- 10%
Output power	125 mA max. permanent
Output current limit	200 mA +/- 20%
Integrated protection function	short circuit proof, overload
Dielectric strength against internal supply	1500 V DC resp. 500 V AC for 1 min.

Analog Inputs	
Resolution	12 Bit
Measuring tolerance from measuring range end value	T_{amb} = -20…60 °C: <= +/-0,5 %
Voltage Inputs	
Measuring range (U_{DIFF})	-10…+10 V (SELV, PELV)
Overvoltage strength	+/- 26 V
Input resistance (U_{DIFF})	>= 200 kΩ
Measuring value resolution	<= 5 mV
Common mode voltage (U_{COM})	-10…+10V
Electrical Inputs	
Measuring range (I_{DIFF})	0…20mA (SELV, PELV)
Overvoltage strength	+/- 10 V
Input load	<= 100 Ω
Measuring value resolution	<= 5 µA
Common mode voltage (U_{COM})	-0,2…+0,2 V
Relay contacts	
Load capacity	24 ... 250 V AC 2 A; 110 V DC 0,5 A; 220 V DC 0,3 A

Technical Data

Inputs for temperature sensors

Pluggable sensor type	
PT100 oder PT1000	
Plug type	2-wire, 3-wire or 4-wire
Resolution	0,1 °C
Measuring range	-40 °C – 800 °C
Measuring tolerance	<1% of the measuring value +/- 1 digit at -20 to +60°C area temperature

Power consumption

Number of channels	Power consumption [W]			
	BSM	BSM with integrated repeat relays	USM	USM with integrated repeat relays
8	< 4	< 6	< 8	< 10
16	< 5	< 9	< 9	< 13
24	< 5	< 13	< 10	< 17
32	< 6	< 11	< 10	< 15
40	< 7	< 19	< 11	< 24
48	< 8	< 13	< 12	< 17

General Data	
Backup time for	
Failure / short circuit	100 ms
Response delay BSM-C	100 ms
Response delay BSM-P, USM	configurable (5 ms … 9 h)
Flashing frequency	
flashing	2 Hz
slow flashing	0,5 Hz
Load capacity of the relay contacts	24 ... 250 V AC 2 A; 110 V DC 0,5 A; 220 V DC 0,3 A
System bus	
Plug	RJ45 based on CAN-Bus
Bus cable	Ethernet patch cable Cat5e IEC11801
Terminating resistor	120 Ω
Length	maximum 10 m (from device to device)
Overall length	maximum 30 m
Ethernet connection (USM only)	100 Base-T / RJ45
Optical fibre-connection (optional USM)	Multimode 50-62,5/125 µm @1300 nm; Connector LC-duplex according to standard IEC 60874-13
Internal horn volume	75 dBA at a distance of 1 m

Mechanical Data

Type BSM/USM	Front frame H x W x D [mm]	front panel [mm]	Depth with front frame and terminals [mm]	Size of the Labeling windows No. H x W [mm]	Weight [kg]
08	96 x 96 x 8	92 x 92	100	1 80 x 60	approx. 0,40
16	96 x 96 x 8	92 x 92	100	2 80 x 26	approx. 0,45
16 wide housing 24 and 32	96 x 192 x 8	92 x 186	100	2 80 x 67 3 80 x 42 4 80 x 29	approx. 0,70
32 wide housing 40 and 48	96 x 287 x 8	92 x 282	100	4 80 x 53 5 80 x 41 6 80 x 31	approx. 1,00

Technical Data

Mounting	Panel mounting
Required mounting depth	120 mm
Minimal horizontal distance	
of two devices	15 mm
Connection terminal	pluggable
Tightening torque	0,5 … 0,6 Nm
Conductor cross section rigid or flexible	
without ferrules	0,2 ... 2,5 mm^2
with ferrules	0,25 ... 2,5 mm^2
Connection terminal X6, X96 (spring-loaded terminal)	pluggable
Conductor cross-section	
without ferrules (rigid)	0,14 ... 0,5 mm^2
with ferrules (rigid or flexible)	0,25 ... 0,5 mm^2
Environmental conditions	
Operating ambient temperature	-20°C .... +60°C
Storage temperature	-20°C .... +70°C
Duty cycle	100 %
Protection class front side	IP 54
Protection class rear	P 20
Humidity	On an annual average, a maximum of 75% relative on 56 days up to 93% relative humidity; condensation not permitted during operation [Test:40°C, 93%rH>4days]

Electrical Data

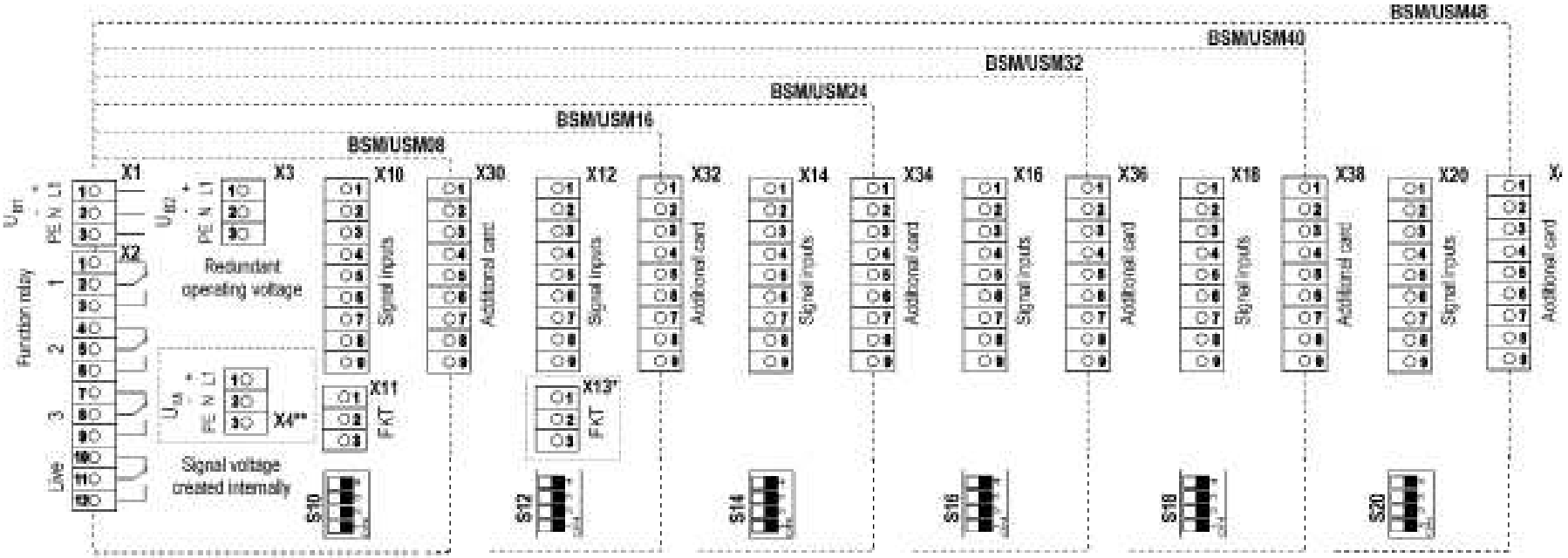
Voltage dielectric strength / withstand power frequency voltage strength	
RS232/RS485 interface against	
Digital inputs	4 kV AC / 50 Hz 1 min
Analog inputs	1kV AC / 50Hz 1min (functional insulation)
Inputs for temperature sensors	2,5 kV AC / 50Hz 1 min (functional insulation)
Relay outputs	4 kV AC / 50 Hz 1 min
Supply (110 / 230V AC/DC)	4,0 kV AC / 50 Hz 1 min
Supply (12 / 24 / 48 V AC/DC)	2,0 kV AC / 50 Hz 1 min
Relay contacts against each other	500 V / 50 Hz 1 min
Surge withstand strength	
System bus, RS232/RS485 and USB against	
Digital inputs	5 kV ; 1,2 / 50 µs; 0,5 J; acc. to IEC60255-27
Relay contacts	5 kV ; 1,2 / 50 µs; 0,5 J; acc. to IEC60255-27
Supply	5 kV ; 1,2 / 50 µs; 0,5 J; acc. to IEC60255-27
Relay contacts against each other	1 kV ; 1,2 / 50 µs; 0,5 J; acc.to IEC60255-27

Electromagnetic Compatibility

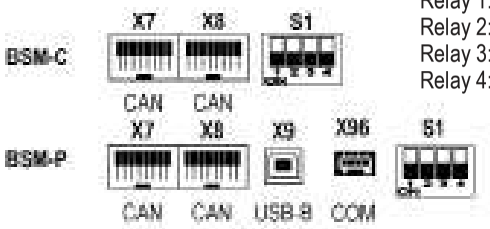
Noise immunity acc. to	DIN EN 61000-4-2 DIN EN 61000-4-3 DIN EN 61000-4-4 DIN EN 61000-4-5 DIN EN 61000-4-6 DIN EN 61000-4-12
Noise irradiation acc. to	DIN EN 61000-3-3 DIN EN 55011

The devices are designed and manufactured for applications in the energy supply industry according to EMC-standard.

Please be sure to observe the alarm sequence on the front of the devices according to section "Front and rear views" and the assignment of the inputs to any external relay expansion modules connected (see separate description of the relay expansion modules).



Interfaces / switches



Terminal X13
Function inputs 3 and 4
not for BSMUSM08

Assignment of function relays (factory default)
Relay 1: All collective reports / all groups
Relay 2: Not assigned
Relay 3: Horn
Relay 4: Live contact

**** Terminal X4 - Supply voltage for the signal inputs**
optional only available for BSMUSM16W - BSMUSM48

2. Network interface (optional)

Type LAN

Type optical fiber

Terminal assignments and alarm on the front panel
The first input of the input terminal with the highest designation is always the first alarm at the top left of the display on the front panel (e.g. BSM48 - X20.1).

Assignment COM as RS232	Assignment COM as RS485
1 - +5V max. 10 mA	1 - +5V max. 10 mA (for optional RS485 termination)
2 - RxD	2 - A (not inverted signal)
3 -TxD	3 -B (inverted signal)
4 - GND	4 - GND

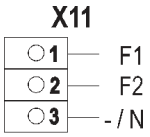
Note: The PE connection of the operating voltages must be connected to a protective conductor system!
The cable shield of the COM cable must be connected to PE!

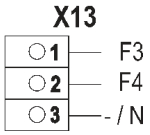
The **CAN bus sockets X7 and X8** provide a system bus for expansion modules or for setting up cascaded fault indication systems.

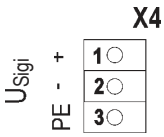
A system bus is available on the CAN bus terminals X7 and X8 for expansion modules or for setting up cascaded fault signal systems.

The USM is parameterized only via the internal web server and therefore does not have DIP switches.

Detailled terminal assignment







Function Inputs **Internally generated signalling voltage**

Assignment of the function inputs

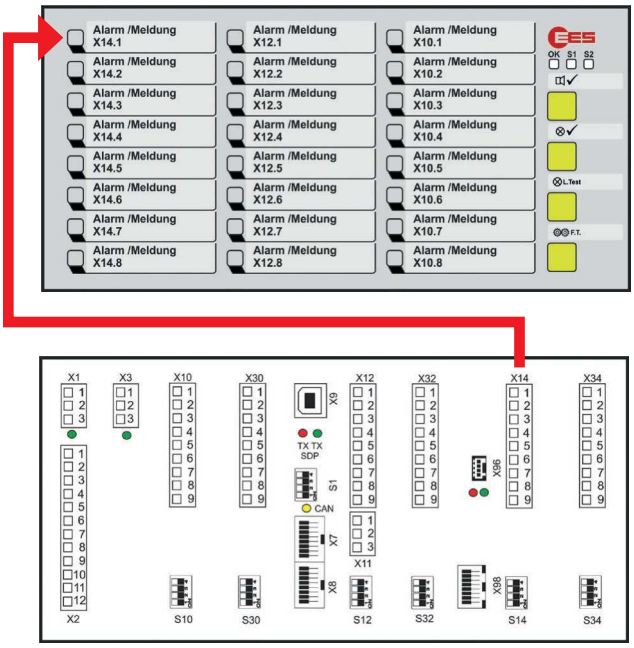
BSM-C - Fixed assignment (see description BSM-C on page 3)

BSM-P - Parameterizable (Default settings please see description buttons and functional inputs on page 6)

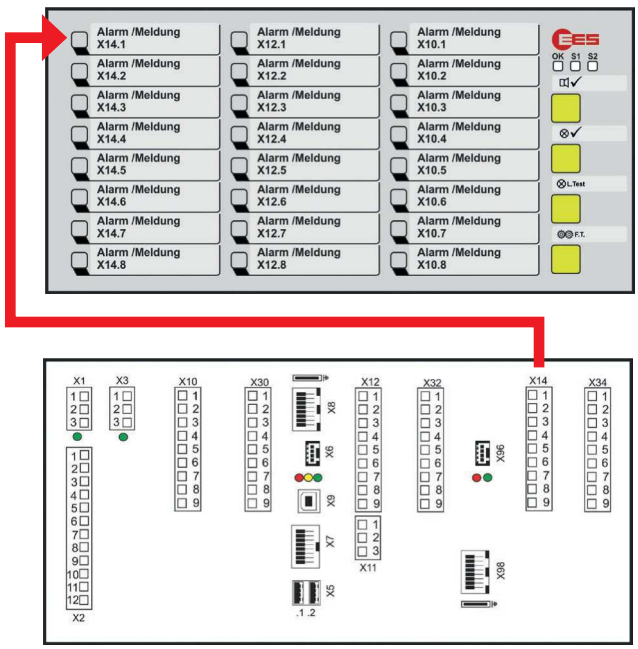
USM - Parameterizable (Default settings please see description buttons and functional inputs on page 6)

Voltage of the function inputs = signal voltage U_{Sig}

Front and back views



BSM 24



USM 24

Assignment of input terminals and alarms on the front panel

The first input of the input terminal with the highest designation is always the first alarm in the upper left corner of the LED display on the front panel. In the example above, this is X14.1.

The rear views of the devices are only shown as examples. Some of the visible connectors and indicators are only available if the corresponding optional functions are available. For more detailed information, please refer to the corresponding operating manuals.

Ordering Code

BSM-C – Basic version

59	B	x	x	x	C	R	x	x	0	
										Number of Signal Inputs
		0	8							8 Signal Inputs
		1	6							16 Signal Inputs
		1	W							16 Signal Inputs wide-housing (96 x 192 mm) *
		2	4							24 Signal Inputs
		3	2							32 Signal Inputs
		3	W							32 Singal Inputs wide housing (96 x 287 mm)
		4	0							40 Signal Inputs
		4	8							48 Signal Inputs
										Supply Voltage
				1						24 V AC/DC
				2						48 V AC/DC or 60 V DC
				5						110 - 220 V AC/DC
										Signal Voltage
					1					24 V AC/DC
					S					24 V DC (internally generated) *2
					3					48 - 60 V AC/DC
					4					110 V AC/DC
					H					125 V AC/DC
					5					220 V AC/DC
					W					50 - 250 V AC/DC (wide range)
										LED-Colour configurable (red, green, yellow, orange, blue, white)
										Additional feature cards
							0			none
							R			8 repeat relays (for annunciators with 8 signal inputs)
							R			16 repeat relays (for annunciators with 16 signal inputs) *1
							R			24 repeat relays (for annunciators with 24 signal inputs)
							R			32 repeat relays (for annunciators with 32 signal inputs in wide housing) *3
							R			40 repeat relays (for annunciators with 40 signal inputs)
										Redundant Power Supply
								0		no redundant power supply
								1		24 - 60 V AC/DC
								5		110 - 220 V AC/DC

59 B [ ][ ][ ][ ] C R [ ][ ] 0 Ordering Code

*1 16-fault annunciator with integrated relay outputs only available in wide housing (96 x 192 mm)
*2 Option is only available for BSM with 16 signal inputs in wide housing and with 24 - 48 alarms.
*3 Option is only available for BSM with 32 signal inputs in wide-housing.

Example for ordering

59B1W55CRR1

BSM with 16 signal inputs
Supply voltage 220 V
Signal voltage 220 V, RGB-LEDs
Repeat-relays, redundant power supply 24 – 60 V

For BSM with 48 input channels, the internal 1:1 relay option "R" is not available.

BSM-P - Parameterizable Version

59	B	x	x	x	x	P	R	x	x	x	
											Number of Signal Inputs
		0	8								8 Signal Inputs
		1	6								16 Signal Inputs
		1	W								16 Signal Inputs in wide housing (96 x 192 mm)
		2	4								24 Signal Inputs
		3	2								32 Signal Inputs
		3	W								32 Signal Inputs in wide housing (96 x 287 mm)
		4	0								40 Signal Inputs
		4	8								48 Signal Inputs
											Supply Voltage
				1							24 V AC/DC
				2							48 V AC/DC or 60 V DC
				5							110 - 220 V AC/DC
											Signal Voltage
					1						24 V AC/DC
					S						24 V DC (internally generated) *2
					3						48 - 60 V AC/DC
					4						110 V AC/DC
					H						125 V AC/DC
					5						220 V AC/DC
					W						50 - 250 V AC/DC (wide range)
											LED-Colour configurable (red, green, yellow, orange, blue, white)
											Additional feature cards
								0			none
								R			8 repeat relays (for annunciator with 8 signal inputs)
								R			16 repeat relays (for annunciator with 16 signal inputs) *1
								R			24 repeat relays (for annunciator with 24 signal inputs)
								R			32 repeat relays (for annunciator with 32 signal inputs) *3
								R			40 repeat relays (for annunciator with 40 signal inputs)
								1			8 repeat relays (independent from no. of signal inputs)*1
								2			16 repeat relays (independent from no. of signal inputs)*1 / *2
											Redundant Power Supply
									0		no redundant power supply
									1		24 - 60 V AC/DC
									5		110 - 220 V AC/DC
											Interface Modbus RTU
										0	none
										M	switchable RS232 or RS485

59	B					P	R				Ordering Code

*1 16-fault annunciator with integrated relay outputs only available in wide housing (96 x 192 mm) and RGB-LEDs.
*2 Option is only available for BSM with 16 signal inputs in wide housing and with 24 - 48 signal inputs.
*3 Option is only available for BSM with 32 singal inputs in wide housing

Example for ordering

59B1W55PRR10 BSM-P with 16 signal inputs
Supply voltage 220 V
Signal voltage 220 V, RGB-LEDs
Repeat-relays, redundant power supply 24 – 60 V

For BSM with 48 input channels, the option internal 1: 1 relay option "R" is not available.
However, 1 or 2 relay cards can be integrated. The relays can be freely assigned to the inputs.

USM - Annunciators with communication interface

59	U	x	x	x	x	W	x	R	x	x	
											Number of Signal Inputs
		A									8 Signal Inputs *6
		B									16 Signal Inputs
		W									16 Signal Inputs Wide-housing (96 x 192 mm) *1
		C									24 Signal Inputs
		D									32 Signal Inputs
		Y									32 Signal Inputs in wide housing (96 x 287 mm)*6
		E									40 Signal Inputs
		F									48 Signal Inputs
											Supply Voltage
			1								24 V AC/DC
			2								48 V AC/DC or 60 V DC
			5								110 - 220 V AC/DC
											Signal Voltage
				1							24 V AC/DC
				S							24 V DC (generated internally) *7
				3							48 - 60 V AC/DC
				4							110 V AC/DC
				H							125 V AC/DC
				5							220 V AC/DC
				W							50 - 250 V AC/DC (wide range)
											IT security options
					S						IT security according to BDEW guidelines and event recorder
					P						Port Security, extended security configuration including option S *5
											Protocol Interface Card 1
						W					LAN (RJ45) without IEC 61850
						F					LAN (RJ45) IEC 61850 *2
											Protocol Interface Card 2 *1
							0				not equipped
							W				LAN (RJ45)
							L				Optical fiber (LC-socket)
											LED-Colour configurable (red, green, yellow, orange, blue, white)
											Optional Feature Cards
									0		no repeat relays and no analog cards
									R		8 repeat relays (only for annunciator with 8 signal inputs)
									R		16 repeat relays (only for annunciator with 16 signal inputs in wide housing)
									R		24 repeat relays (only for annunciator with 24 signal inputs)
									R		32 repeat relays (only for annunciator with 32 signal inputs in wide housing)
									R		40 repeat relays (only for annunciator with 40 signal inputs)
									1		8 repeat relays (independent from no. of signal inputs) *1
									2		16 repeat relays (independent from no. of signal inputs) *1 / *3 / *4
									A		4 analog inputs (only for annunciator with 8 signal inputs)
									A		8 analog inputs (only for annunciator with 16 signal inputs in wide housing)
									A		12 analog inputs (only for annunciator with 24 signal inputs)
									A		16 analog inputs (only for annunciator with 32 signal inputs in wide housing)
									A		20 analog inputs (only for annunciator with 40 signal inputs)
									3		4 analog inputs (independent of the size of the fault annunciator) *1
									4		8 analog inputs (independent of the size of the fault annunciator) *1 / *3 / *4
									5		8 repeat relays + 4 analog inputs (independent of size of the fault annunciator) *3 / *4
									6		16 repeat relays + 4 analog inputs (only for annunciator with 24 signal inputs)
									7		8 repeat relays + 8 analog inputs (only for annunciator with 24 signal inputs)
									T		2 PT100/1000 inputs (only for annunciator with 8 inputs)
									T		4 PT100/1000 inputs (only for annunciator with 16 inputs in wide housing)
									T		6 PT100/1000 inputs (only for annunciator with 24 inputs)
									T		8 PT100/1000 inputs (only for annunciator with 32 inputs in wide housing)
									T		10 PT100/1000 inputs (only for annunciator with 40 inputs)
									8		2 PT100/1000 inputs (irrespective of the annunciator's size) *1
									9		4 PT100/1000 inputs (irrespective of the annunciator's size) *1 / *3 / *4
									B		8 repeat relays + 2 PT100/1000 inputs (irrespective of the annunciator's size) *3 / *4
									C		8 repeat relays + 4 PT100/1000 inputs (only for annunciator with 24 inputs)
									D		8 repeat relays + 2 PT100/1000 + 4 analog inputs (only for annunciator with 24 inputs)
									E		16 Repeat relays + 2 PT100/1000 inputs (only for annunciator with 24 inputs)
											Redundant Power Supply
										0	no redundant power supply
										1	24 - 60 V AC/DC
										5	110 - 220 V AC/DC

59	U							R			Ordering Code

...see next page

USM - Annunciators with communication interface

Ordering Code 59ZLICP61850 - License key for IEC 61850 communication (if ordered later)

*1 Fault annunciator with 16 inputs and additional cards only available in wide housing (96 x 192 mm). A maximum of 2 additional cards can be inserted.
*2 Communication via IEC 61850 can only be used on one network interface. If a second network interface is available, it can be decided via parameterization on which of these two interfaces the IEC61850 is used.
*3 Option for USM with 24 signaling channels not available
*4 Option for USM with 8 signaling channels not available
*5 Availability on request
*6 USM32 in wide housing mandatory with 32 relay outputs, 16 analog inputs and with 2nd interface card and at least 2 additional cards.
*7 Option is only available for USM with 16 signal inputs in wide housing and with 24 - 48 signals

For USM with 48 alarm channels, the “R” option for internal 1:1 relays is not available. However, 1 or 2 relay cards can be integrated. The relays can be assigned to the inputs or controlled via an interface.

Accessories

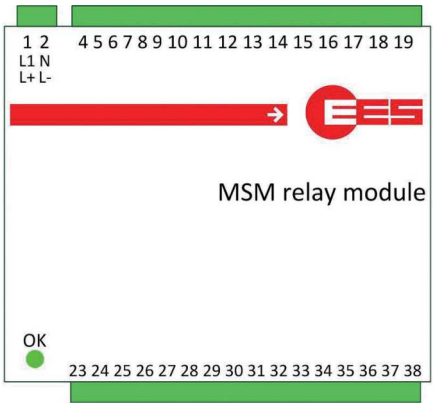
Universal Display Module

Order number	Name	
59D0510UDM00	UDM5	24 V DC
59D0550UDM00	UDM5	110 - 220 V DC
59ZDSOFT	Lizenz	UDM *

* One-time license for parameterization of any number of UDMs.

Available accessories

MSM-RM



External relay modules for DIN-rail mounting can be connected to all BSM and USM devices in order to multiplicate signals. The relay modules are connected to BSM and USM annunciators via CAN-Bus. Please see our datasheet MSM-EM-DB-UK for full details.

Blind or frontplates for 19"-rack-mounting

In order to be able to use the fault annunciators of the BSM and USM series also in 19 "systems, we offer a large number of blind and frontplates with different cut-outs for the installation of our fault annunciators.

We distinguish between:

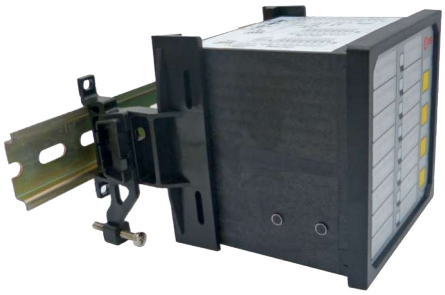
- blind plates, which are attached to a 19 "system instead of a subrack and
- front panels, which are integrated into an existing rack.

Adapter plate

Adapter plate for replacing a 96 x 144 front frame unit with a 96 x 96 front frame unit.

Odering Code: 58ZFP211

DIN-Rail adapter



Adapter for mounting a panel-mounted fault annunciator on the DIN rail TH35

Ordering Code: 58ZMADA-DIN

Parameterisation accessories for BSM-P

Ordering Code: 59ZUSB20A-B	Parameterisation cable for connection of parameterizable BSM-P fault annunciator to the computer. Type USB-A to USB-B.
Ordering Code: 97ZPSoftPara	You can download our parametersiation software on our website www.ees-annunciator.com.

Patch cable for cascading

For cascading several fault annunciator to one alarm system, connecting cables of different lengths are included in the delivery. If you require different cable lengths, please contact our service team.

Ordering Code:	K118-0.5	(0,5 m)
	K118-1	(1 m)
	K118-3	(3 m)
	K118-5	(5 m)

Upgrade for USM

Ordering code: 59ZUPGRADE40	Software upgrade USM 2G from firmware version 2.x / 3.x / 4.x to 4.y (latest firmware)

Our service team will gladly assist you in choosing the right accessoires.

Contact

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