

Monitoring Solutions for tomorrow's needs.

FAULT ANNUNCIATORS | SIGNAL TRANSMISSION | VOLTAGE MONITORING



About us



“Under the corporate name of Elektra Elektronik GmbH & Co. Störcontroller KG – or in short form: EES – since more than 40 years we provide high quality solutions in the range of fault annunciators and tele-control systems – worldwide.”

Surveillance of various facilities has to be possible at any time for maintenance personnel. To allow for an easy optical and acoustical display of actual states or events on-site, universal and robust annunciator systems are required.

The comprehensive portfolio of EES monitoring products enables solutions that fit seamlessly into your structures.

EES – annunciator systems serve a multitude of application ranges. With research and development, production and sales all under one roof at our headquarters in Germany, we are able to respond quickly to customer needs and to stay at the cutting edge of technology.

Aside from that our products benefit from more than 40 years of experience in countless applications worldwide. They are used in Substations | Transformer stations | Facility monitoring | Site monitoring | Industrial facilities | Pumping stations | and many more...

EES offers a comprehensive portfolio, which includes annunciators for almost any task and size of site.

The range of products stretches from simple indication devices up to networkable annunciator systems with communication interface, e.g. according to standards IEC 61850 or IEC 60870-5-101/104.

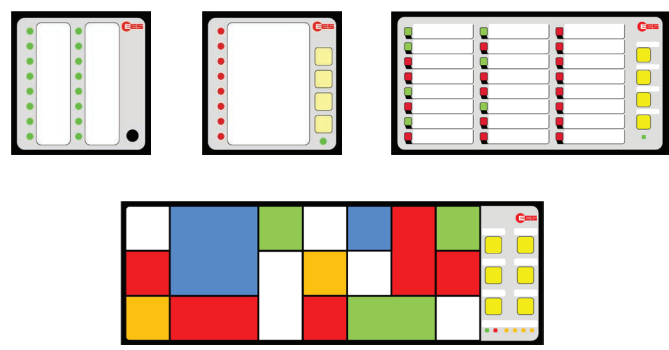
Of course all EES – annunciators focus on high functionality together with ease-of-use.

Convince yourself.

THE PORTFOLIO AT ONE GLANCE

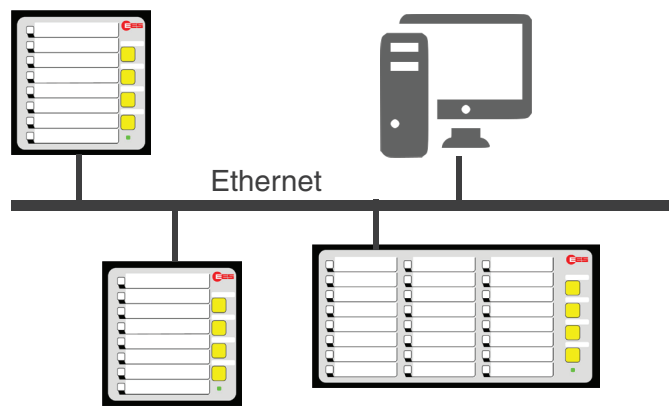
Fault Annunciators

LED/WINDOWS



- All ANSI/ISA sequences
- Bi- or Multicolour LED
- Individually parameterisable
- Optional integrated relay outputs
- Optional redundant power supply
- Various voltage levels 24-250 V AC/DC
- Drop flap annunciators

NETWORKABLE ANNUNCIATORS

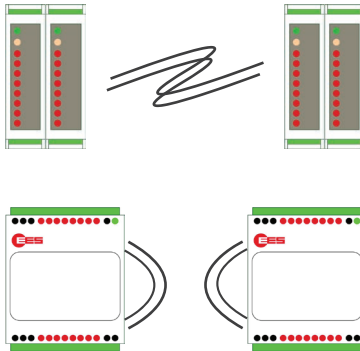


- Integrated Web-Server
- Protocol interfaces:
 - IEC 61850
 - IEC 60870-5-101
 - IEC 60870-5-104
 - Modbus RTU
 - CS 31

THE PORTFOLIO AT ONE GLANCE

Signal Transmission and Voltage Monitoring

SIGNAL TRANSMISSION

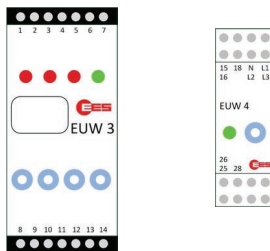


- Transmission up to 15km
- Wired or wireless
- High interference Immunity
- Modular Expandability with Digital or Analog I/Os
- Parameterization by DIP-Switches

From simple LED indication over modular and parameterisable annunciators up to networkable annunciator systems with protocol interfaces - the EES-portfolio offers the perfect solution for every application!

Moreover voltage monitoring and signal transmission are core competences of EES for more than 40 years.

VOLTAGE MONITORING



- 3-Phase voltage supervision
- Adjustable or fixed threshold
- Over- / Undervoltage / Phase
- Failure signalling contacts and LED indication

EES products are characterised by their high reliability through robust design as well as their ease-of-use. Easily accessible DIP-switches and an intuitive parameterization interface allow for an quick and straight forward commissioning.

OVERVIEW

Indication modules and fault annunciators



Series LAB

The simple
indication devices

Status indication with
changeable LEDs and
collective report



Series SSM

The standard
annunciators

Annunciators with fixed
alarm sequence and
collective report or relay
outputs



Series BSM

The flexible
annunciators

Parameterisable annunciators
with numerous options
and different sizes

INDICATION MODULES AND FAULT ANNUNCIATORS

Series LAB – the indication device

Easy and flexible display of site conditions!

Due to low installation depth and easy handling the LAB can be integrated in almost every facility.

Depending on the LAB version, the triggering of the LEDs can be carried out from the signal inputs or through the Modbus-RTU interface.

- 8 or 16 signals with changeable LEDs
- Integrated push-button for lamp test
- Clear-sight-pockets for labelling strips
- Compact device in 96 x 96 mm housing
- Low installation depth
- Collective report as option
- Normally closed inputs as option



THE SIMPLE INDICATION DEVICE FOR EVERY APPLICATION

INDICATION MODULES AND FAULT ANNUNCIATORS

Series LSM / SSM – The standard fault annunciators



THE STANDARD ANNUNCIATOR WITH PRESET FUNCTIONALITY

The annunciators of the SSM-series are simple, consolidated and universal annunciators for front-panel-mounting.

The device comes with red or green LEDs with high reading angle, push-buttons for acknowledgement and lamptest as well as a relay for collective report and horn triggering each.

- 8 or 16 signal inputs with corresponding LEDs
- Standard LED colour red or green / red (8/8)
- Fixed alarm sequence for signal processing
- Integrated push-buttons for acknowledgement, horn acknowledgement and lamptest
- Potential separation of all circuits by optocouplers
- Relay module for contact multiplication as option

INDICATION MODULES AND FAULT ANNUNCIATORS

Series FSM – The „powerless“ indicators

The FSM allows for an energy-independent long-term retention of signals at issue by means of bistabil mechanical indication elements in a consolidated device.

Independent from lighting situation, signals can be recognised in an optimal way at any time.

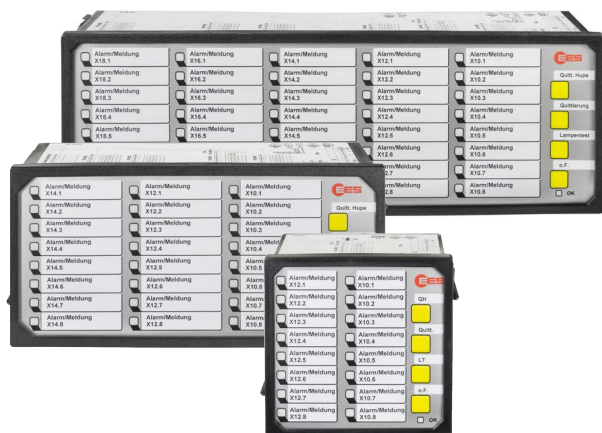
- 10 drop-flap-elements with integrated LED
- 2 CAN-Bus-interfaces for connection of up to 4 annunciators
- 6 function inputs with parameterisable functionality (e.g. external acknowledge, lamptest,...)
- Parameterisable by DIP-switches and / or software



THE STANDARD ANNUNCIATOR WITH PRESET FUNCTIONALITY

INDICATION MODULES AND FAULT ANNUNCIATORS

Series BSM – The flexible fault annunciators



THE FLEXIBLE ANNUNCIATOR FOR ALL APPLICATIONS

The flexible annunciator BSM can be adapted easily and individually for your application. Different numbers of signal inputs and easy handling and parameterization make the BSM an essential for all classical annunciator applications.

- 6 different sizes with 8, 16, 24, 32, 40 or 48 signal inputs
- Parameterisable by means of DIP-switches and software
- 4 push-buttons, 2 function inputs and 4 function relays
- Redundant power supply as option
- Integrated 1:1 relays and 1:X relays or external relay modules as option
- Integrated logic for assignment of in- and outputs

Many applications require the maintenance personnel to register different signals and alarms at one glance. The annunciators of the series BSM are characterised by very bright LEDs with wide reading angle.

The flexible annunciator BSM – easily adapted individually to your application. Suitable for all classical annunciator applications due to various numbers of inputs and easy handling and parameterization.

The BSM is available in 6 different sizes: 8, 16, 24, 32, 40 and 48 inputs. By cascading up to four annunciators one virtual annunciator with collective parameterization and acknowledgement and max. 192 signal inputs can be realised. The LED-colour can be set to the colours red and green individually for each input by means of push-buttons.

All essential annunciator functions like alarm-sequence or normally open or normally closed principle of the inputs can be parameterized by DIP-switches. Additional parameterisation options are available with the parameterization software. The BSM is available with redundant power supply or integrated relay outputs as options.

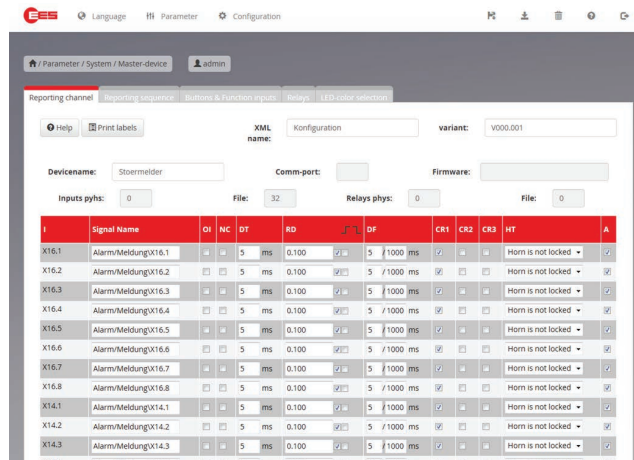
INDICATION MODULES AND FAULT ANNUNCIATORS

Series BSM – Intuitive parameterization

The intuitive parameterisation software offers access to all features of the annunciators and provides adaption of the annunciator individually to your application.

Among others, the following features are available:

- All reporting sequences acc. to ANSI/ISA
- Operation indication or fault alarm processing for each input
- NO / NC principle for each input
- Response delay / de-fluttering
- Relays triggering and assignment
- Assignment of in- and outputs
- Function of push-buttons and function relays
- Assignment of LED-colours
- Inversion of signals
- Printing of labelling strips



PARAMETERIZATION SOFTWARE WITH INTUITIVE HANDLING

INDICATION MODULES AND FAULT ANNUNCIATORS

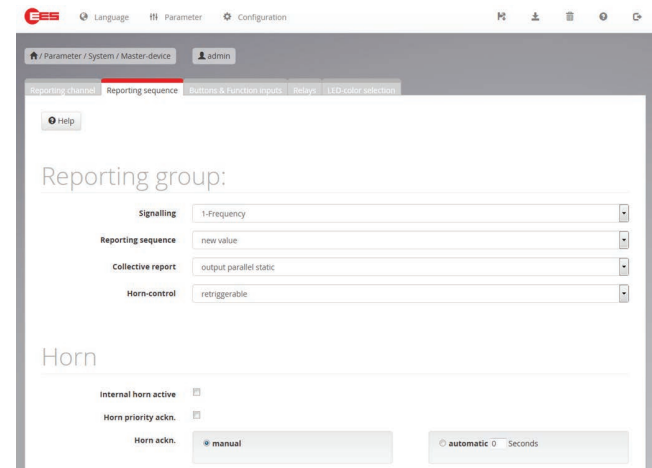
Series BSM – Intuitive parameterization

Different applications and branches require different alarm sequences.

With the BSM, you can individually define an alarm sequence or choose one of the standardised sequences acc. to ANSI/ISA.

You can choose between 1- or 2 frequency-flashing, multiple acknowledgement (Reset), first-up or no-first-up processing, manual or automatic horn acknowledgement and many more options.

All settings are available in clearly arranged menus in the parameterization software.



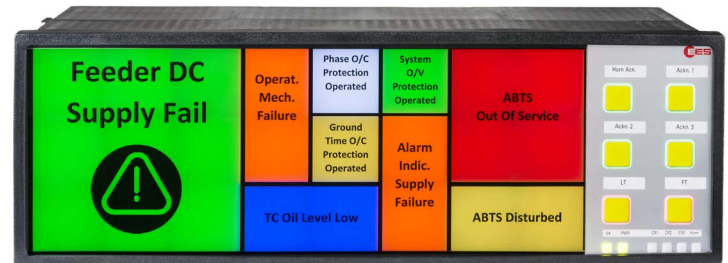
EASY PARAMETERIZATION E.G. OF ALARM SEQUENCES

FAULT ANNUNCIATORS WITH EXTENDED FUNCTIONALITY

Series WAP – The fully fledged window panel

The Window Annunciator Panel WAP provides up to 24 alarms with a window-size of 28x28 mm within an ultra-compact housing. For bigger applications, the WAP can be expanded. Size and colour of the windows can be freely configured and different variants are available for signal and supply voltages from 24 - 220 V AC/DC.

- Ultra compact design with 24 inputs
– window size 28x28 mm
- Up to 4 devices cascadable
– up to 96 inputs
- Integrated repeat relays as option
(triggerable also over IEC 61850)
- Redundant power supply optionally
- Window sizes and colours as well as input processing completely parameterisable by Web-Server
- IEC 61850 / 60870-5-104 via RJ45 or optical fiber
- Status LED for operation, collective reports, horn and power supplies
- Illuminated push-buttons for guided operation
- Mute and unmanned functionality



NO WINDOW CHANGE! – NO FUMBLING!

The WAP Annunciator comprises 24 highly configurable inputs in different variants from 24-220 V AC/DC.

The size of each window can be enlarged individually. The labelling for each window is adapted automatically to the window size. Labelling texts can be entered and printed out from the parameterization interface.

Omniflexibility – Design your colour for good, alarm flashing and acknowledged state. Drag and drop your windows to your defined size. No fumbling - No hassle!

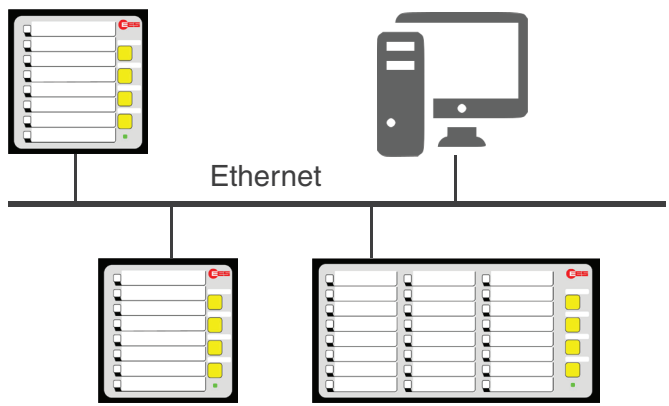
The essential advantage of our backlit design is that no mechanical changes are necessary to modify the window appearance. The individual size and colour of any window can be parameterized by browser easily by yourself on-site. For commissioning and putting into

service any device from stock can be used. Adjustments can be done on site with your customer. Only a printer is needed to print out the dynamically generated frame setting and labelling foil.

Save time and changes.

OVERVIEW

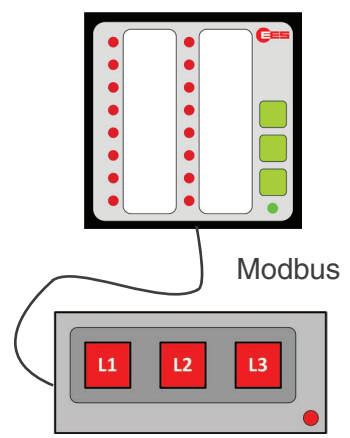
Fault annunciators with extended functionality



Series USM

The networkable
annunciators

Annunciator systems with
communication to superior
systems



Series LAB

Serial communication
via Modbus

Indication device for
displaying states and faults
by serial communication

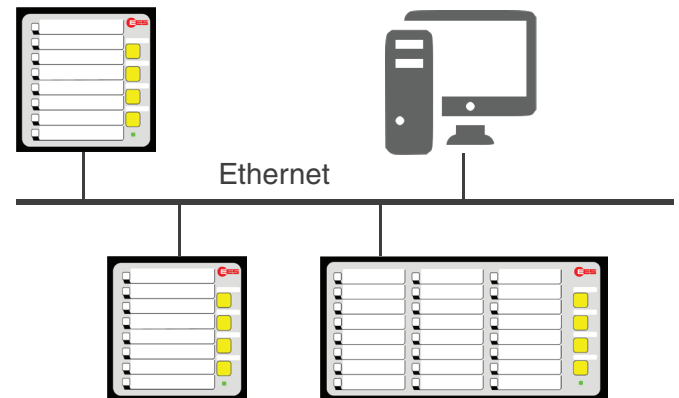
FAULT ANNUNCIATORS WITH EXTENDED FUNCTIONALITY

Series USM – The networkable annunciators

The USM offers all functions of a classical fault annunciator for processing and display of alarms.

Additionally all alarms as well as acknowledgement and device information are available on communication interfaces acc. to IEC 60870-5-101/104 or IEC 61850.

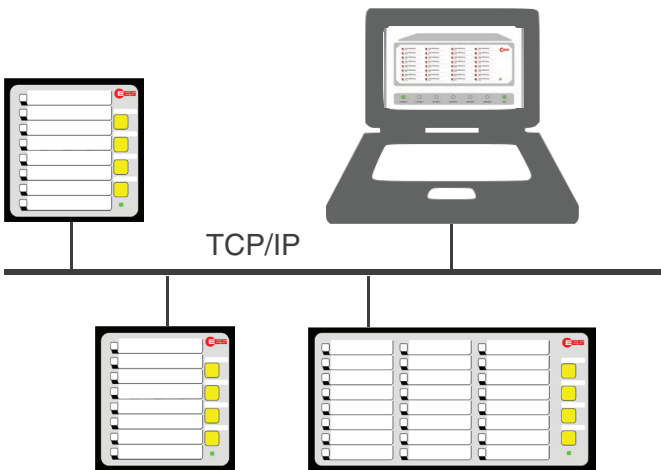
- 8 / 16 / 24 / 32 / 40 / 48 signal inputs with corresponding LED display
- Integrated logic for assignment of in- and outputs
- Ethernet-interface with communication protocols IEC 61850 and/or IEC 60870-5-104
- Serial interface with communication protocol IEC 60870-5-101
- Realisation of redundant communication structures by means of Multilink- and multiple interfaces



**ALARM INFORMATION ON STANDARDISED
COMMUNICATION PROTOCOLS!**

FAULT ANNUNCIATORS WITH EXTENDED FUNCTIONALITY

Series USM – Web-Server-Parameterization



**COMPLEX PARAMETERIZATION –
SIMPLY CLEARLY ARRANGED!**

All parameters for processing and display of alarms as well as protocol-specific settings – e.g. IP- and Link-Address or information object addresses and types – can be comfortable configured for the USM by means of the integrated Web-Server.

For devices with IEC 61850 interface, individual reports can be configured by drag & drop.

No additional parameterization software or special cables are required – thus always all necessary information and tools for parameterisation are available during commissioning and operation!

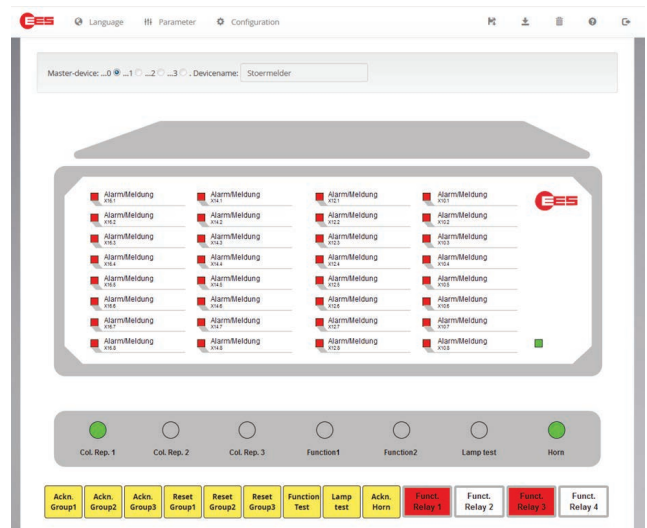
FAULT ANNUNCIATORS WITH EXTENDED FUNCTIONALITY

Series USM – Online-Monitoring

In addition to the numerous options for parameterisation, the Web-Server of the USM annunciators offers the possibility for online-monitoring of the current status of your site.

Under the respective IP-Address you can monitor your site anytime and from anywhere.

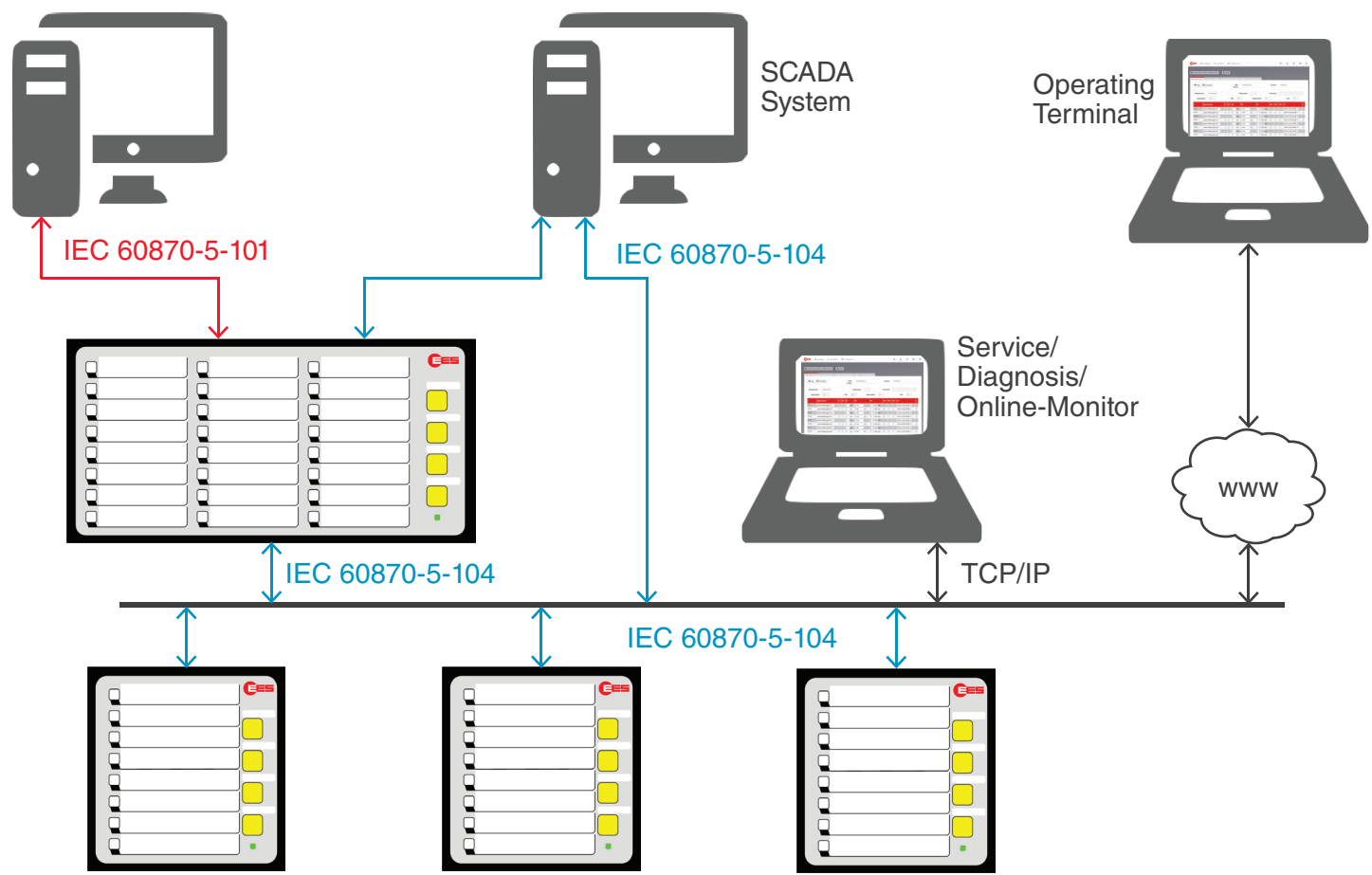
Even remote control – e.g. of the push buttons for acknowledgement – is available through the web interface of the annunciator.



ALL INFORMATION – ANYWHERE - ANYTIME!

FAULT ANNUNCIATORS WITH PROTOCOL INTERFACES

Series USM – IEC 60870-5-101/104 interface



REDUNDANT STRUCTURES WITH MULTILINK- AND MULTIPLE INTERFACES

With annunciators of the series USM, alarms can be transmitted from the field level directly to the SCADA or to telecontrol systems. With the use of standardised telecontrol protocols acc. to IEC 60870-5-101/104 a lot of cabling works can be saved compared to conventional solutions with forwarding relays.

Transmission of alarms and events from the annunciator to superior SCADA systems – fast and easy commissioning due to use of standardised protocols acc. to IEC 60870-5-101/104!

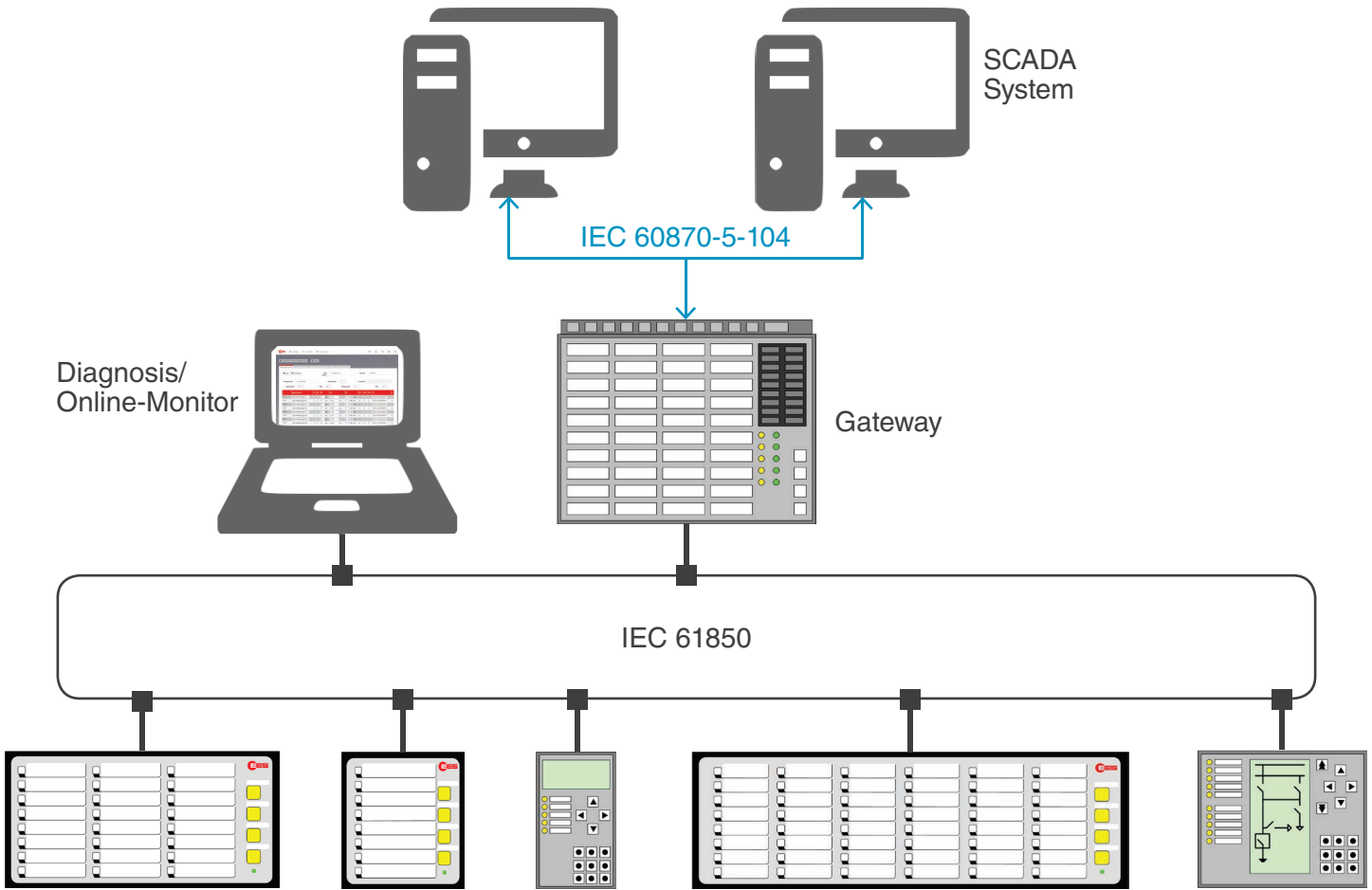
The USM provides all relevant information about alarms and their state of acknowledgement on the protocol interface.

Sensible default settings of the information object addresses and structured addressing allow for an easy setting up of the interface.

Through the protocol IEC 60870-5-104, up to four links to different communication partners as well as redundant structures can be realised.

FAULT ANNUNCIATORS WITH PROTOCOL INTERFACES

Series USM – IEC 61850 interface



INTEGRATION OF SINGLE-POINT INFORMATION INTO IEC 61850 STRUCTURES

In addition to the information that is provided by field and protection devices on the IEC 61850 ring, different single-point information arise in switchgear stations that could not be processed in an IEC 61850 structure up to now.

Easy integration of single-point information into IEC 61850 structures and creation of individual reports – with USM annunciators!

The USM with IEC 61850 interface allows the integration of fault annunciators into station automation for medium and high voltage stations.

The annunciator gathers signals through its galvanic inputs and provides single point information as well as collective reports on the IEC 61850 bus.

By means of optional integrated or external relay outputs even control commands from the SCADA system can be executed.

The IEC 61850 interface supports all required functions and services, for example datasets and reporting.

Pre-built templates simplify the integration of the fault annunciator into the respective station.

SIGNAL TRANSMISSION

Series ZS and MFW

The transmission of digital and analog I/Os can be carried out either unidirectional with ZS8A or bidirectional with ZS16 and MFW. These systems are characterized by a robust design, which allows for a long distance transmission up to 15 km on noisy or disturbed two wire lines and with MFW system even wireless or on optical fibre. Also expandability is provided by digital or analog modules. Designed for small applications with point-to-point or star communication with MFW, data transmission is done by digital telegrams coded with a checksum. The receiver module can reliably recognize disturbed, faulty telegrams and rejects them.

- Up to 15 km distance
- Modular design with 8 Inputs and/or 8 Outputs
- Expansion modules with digital or analog I/Os
- Parameterisable by DIP-switches
- Intrinsically safe state configurable
- Easy adaption to grade of disturbance



ZS8A



ZS16



MFW

RELIABLE SIGNAL TRANSMISSION – WIRED AND WIRELESS!

VOLTAGE MONITORING

Series EUW3 and EUW4

Monitoring of AC 3-phase networks in switch-gears must be done accurately. Under- and over-voltages as well as wire breaks and phase failures can occur.

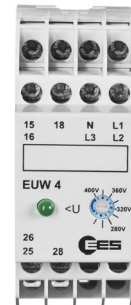
The adaption to parameters on site can be done via potentiometers at the front of the housing, or alternatively fixed thresholds are available.

Signalling relays and status indication LEDs display easily the current status.

- Voltage monitoring per individual phase
- Monitoring voltages from 80V – 420V AC
- Compact housing for DIN rail
- Potential free change over contacts



EUW3



EUW4

THE PROVEN WAY OF VOLTAGE MONITORING.

AT ONE GLANCE

Fault annunciators



LAB



SSM



FSM

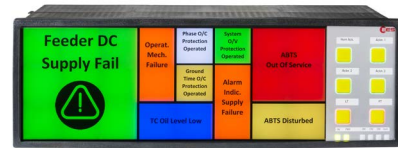
Signal Inputs	• 8, 16	• 8, 16	• 10 • Up to 40 by cascading
Push Buttons	• Lamptest	• Lamptest • Acknowledgement • Horn Acknowledgement	• Lamptest • Acknowledgement • Horn Acknowledgement • Functiontest • Individual by parameterization
Alarm Sequence		• Preset	• Preset • Parameterisable
Relay Outputs	• Collective report (as option)	• Collective report • Horn • Contact multiplication (as option)	• 4 (function parameterisable) e.g. Collective reports, Horn, Watchdog-Contact
Parameterization	• DIP-switches (as option)		• DIP-switches • Windows Software
Communication / Special functions	• CS31 (as option) • Modbus RTU (as option)	• External 1:1-Relays as option • Combined status indication and fault annunciator (LSM)	• Drop-flap annunciator Display of alarms without supply • Logging of events



BSM



USM



WAP

• 8, 16, 24, 32, 40, 48 • Up to 192 by cascading	• 8, 16, 24, 32, 40, 48 • Up to 192 by cascading	• 24 • Up to 96 by cascading	Signal Inputs
• Lamptest • Acknowledgement • Horn Acknowledgement • Functiontest • 4 Buttons freely assignable with P-Version	• Lamptest • Acknowledgement • Horn Acknowledgement • Functiontest • 4 Buttons freely assignable	• Lamptest • Acknowledgement • Horn Acknowledgement • Functiontest • Reset • 6 Buttons freely assignable	Push Buttons
• Preset • Parameterisable	• Preset • Parameterisable	• Preset • Parameterisable	Alarm Sequence
• Up to 3 Collective reports • Horn • Watchdog-Contact • Repeat relays as option	• Up to 3 Collective reports • Horn • Watchdog-Contact • Repeat relays as option	• Up to 3 Collective reports • Horn • Watchdog-Contact • Repeat relays as option	Relay Outputs
• DIP-switches • Browser-based Software	• DIP-switches • Integrated Web-server	• DIP-switches • Browser-based Software • Integrated Web-server	Parameterization
• 1:1-Relays / 1:X Relays internal • 1:1-Relays external • Logic functionality	• IEC 61850 • IEC 60870-5-101/-104 • 1:1-Relays / 1:X Relays internal • Logic functionality	• IEC 61850 • IEC 60870-5-101/-104 • 1:1-Relays / 1:X Relays internal • Logic functionality	Communication / Special functions

AT ONCE GLANCE

Signal Transmission



ZS8A



ZS16



MFW

Signal Inputs / Output	• 8 DI resp. 8 DO • Expansion by 8 DI and resp. 8 DO or 1 AI and resp. 1 AO	• 8 DI and 8 DO per Station • Expansion by 8 DI and 8 DO per module and 4 AI and 4 AO	• Max .128 D I/O or 60 A I/O per Station • Expansion by 8 DI and 8 DO per module and 4 AI and 4 AO
Digital Inputs / Outputs	• Input voltage 16 ... 35 V DC • min. pulse width/-pause 50 ms • max. count rate (basic module) 10 Hz • In and Outputs: 0 ... 20 mA or 0 ... 10 V	• Inputs: 16 ... 35 V DC, max 7mA each • Outputs: 200 mA (Transistor) • In and Outputs: 0 ... 20 mA or 0 ... 10 V • Resolution 8 Bit	• Inputs: 9 ... 255 V AC/DC • Outputs: dep. on Voltage. Max 8A in summary @ 230V AC • In /Outputs: 0(4) ... 20 mA or 0 ... 10 V • Resolution 12 Bit
Analog I/Os	• Resolution 8 Bit		
Speed	• 1,2 – 9,6 kBaud	• 1,2 – 19,2 kBaud	• 1,2 – 19,2 kBaud depending on media
Cycle Time	• 15 – 120 ms	• 6 – 520 ms depending on degree of extension	• 6 – < 500 ms depending on degree of extension
Error Signalling	• Operation Indication by LED	• Operation indication by LED • Watchdog Relay with LED	• Operation indication by LED, Error code • Watchdog Relay with LED • Protocol interface
Parameteri- zation	• DIP-switches	• DIP-switches	• DIP-switches • Software
Commu- nication / Special functions	• Two-Wire • CRC code secured transmisson • Intrinsically safe state	• Two-wire • CRC code secured transmisson • Intrinsically safe state	• Two-wire, radio, power line, fibre, GPRS • CRC code secured transmisson • Intrinsically safe state

AT ONCE GLANCE

Voltage Monitoring



EUW3



EUW4

• Under and overvoltage • Phase failure • Phase sequence	• Undervoltage • Phase Failure	Monitoring Criteria
• 3 x 50V ... 460 V	• 3 x 80 ... 120 V • 3 x 100 ... 150 V • 3 x 185 ... 345 V • 3 x 270 ... 420V	Monitoring Inputs Voltage Range
• 3 red LEDs for Under- / Overvoltage / Direction of Rotation • Green LED for operation indication	• Green LED for operation indication	Displaying Elements
• 0 ... 250 V AC/DC • 4 A @ 0 ... 250 V AC 50/60 Hz • 4 A @ 0 ... 24 V DC • Response Delay adjustable 0,2 ... 10s	• 4 A @ 0 ... 250 V AC* and 0 ... 24 V DC • 1 A @ 60 V DC • 0,3 A @ 110 V DC • 0,1 A @ 250 V DC • Response delay depending on type of failure	Relay Outputs
	• Fixed threshold variants available • No auxiliary voltage is needed for supply	Special Functions

GOOD TO KNOW

Why EES-Products – 10 reasons

- 1.** More than 40 years of experience and application know-how for your success
- 2.** Reliable technology – in use worldwide – thousandfold proven
- 3.** Comprehensive portfolio – from simple to complex functionalities
- 4.** Complementary system accessories for high functionality
- 5.** Robust design for dielectric strength and noise immunity
- 6.** Wide range of voltages from 12 V up to 230 V
- 7.** Wide reading angle due to very bright LEDs
- 8.** Flexible adaption to your requirements
- 9.** Easy handling und setting up
- 10.** Made in Germany



WE ARE INTO SIGNALS

Our main Sectors



We are into signals:



check
and fault annunciating
and telecontrols
control

The history of our medium-sized, family-owned company is a history of success that combines technology competence and innovative capacity since more than 40 years.

Today with a comprehensive portfolio of annunciator systems we contribute for operating reliability of countless different plants. Independent from the size or complexity of the application, we provide a suitable solution for all requirements. We have proven the performance and reliability of our systems in thousands of applications.

Trust us - try us.

YOUR LOCAL PARTNER

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