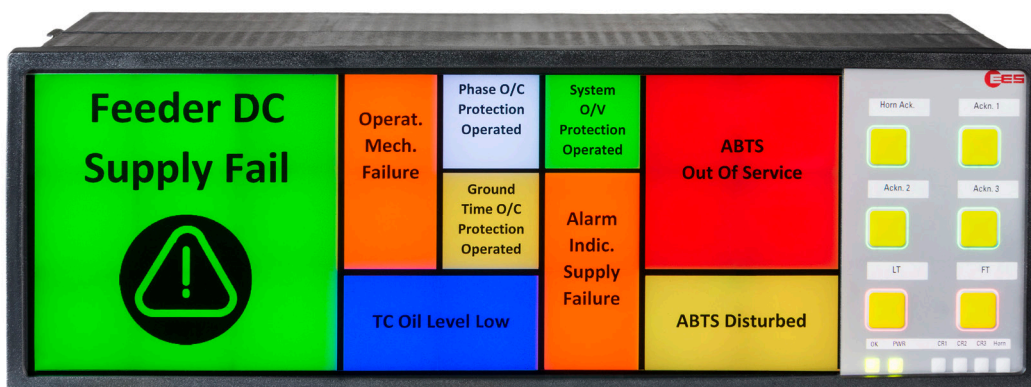# Window facia fault annunciators

➜ WAP – Window Annunciator Panel

› Annunciators for panel mounting with 4, 6, 8 or 24 signal inputs
› Cascading of multiple devices to an annunciating system with up to 96 alarms possible
› Very bright RGB LEDs with parameterizable color (red, green, yellow, blue, orange and white)
› Pockets for individual labelling of windows and buttons
› Integrated buttons, function inputs, function relays, self-monitoring and internal horn
› All standard alarms sequences implemented, parameterisable by Software
  or integrated Web-Server
› Optional:
  • Communication interfaces according to Modbus RTU/TCP, IEC 60870-5-101/104 or IEC 61850
  • Integrated 1:1 relays for multiplication and forwarding of individual alarms
  • Redundant power supply in two voltage ranges available as option
  • Extended IT security according to BDEW guidelines
  • Analog inputs with threshold monitoring and transmission of the values via interface

➜ Datasheet

➔ General system description - annunciator variants

The fault annunciator is available in three different categories:

- WAP-P: Software-parameterisable version
- WAP-K: Annunciator with protocol interface

and two sizes.

Type	Signal Inputs and window size	Housing size incl. terminals (H x W x D) [mm]
WAP 4	4 Signal Inputs window size (H x W) [mm] 35,5 x 31	96 x 96 x 132
WAP 6	6 Signal Inputs window size (H x W) [mm] 23,0 x 31	
WAP 8	8 Signal Inputs window size (H x W) [mm] 16,75 x 31	
WAP 24	24 Signal Inputs window size (H x W) [mm] 35,5 x 31	96 x 267 x135

The sealed front contains buttons and pockets for labelling alarms and buttons. The alarm windows are backlit by RGB light emitting diodes with parameterizable color. With the WAP 24 the size of the individual window can be individually parameterized via PC software or the integrated web server.

The function of the buttons and function inputs can be individually parameterized. The integrated function relays are designed as changeover contacts. They signalize alarm-specific functions (e.g. collective alarm and activation of an external horn) as well as the signaling of a malfunction by a live contact.

In order not only to display the individual fault messages on the respective window, but also to forward them in parallel to the input or output via relay contact (1:1 relay), additional relay cards with normally open contacts can be integrated in the fault annunciator. These relay cards are optional and must be considered accordingly when ordering.

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

- **Mute function:** Affecting the horn triggering

- **Unmanned:** Affecting the horn triggering and the display, as well as the acknowledgement

→ WAP-P: Parameterisable version

In the software-parameterisable version, the fault annunciator has the following interfaces:

- 1 x USB-B (factory interface) - for parameter adjustment via PC software
- 2 x CAN bus / RJ45

A system bus is available at the two CAN bus sockets, which can be used to establish a cascaded fault annunciator system - see section Cascading. Basic settings can be made via DIP switches.

- Message sequence (first-up, new value or operating indication)
- Open-circuit (NO) or closed-circuit (NC) current version of the inputs per signalling group (8 inputs)
- Master/slave functionality and address in cascaded fault alarm system
- Horn control for follow-up subsequent alarm

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

- Function input 1   - external horn acknowledgement
- Function input 2   - external acknowledgement
- Button 1   - horn acknowledgement
- Button 2   - acknowledgement
- Button 3   - lamp test
- Button 4   - function test
- Button 5   - no function assigned (Button only available on 24 WAP)
- Button 6   - no function assigned (Button only available on 24 WAP)
- Relay 1   - collective report 1
- Relay 2   - no function assigned
- Relay 3   - external horn
- Relay 4   - watchdog-contact

Default Settings

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

Parameterisation

To allow for further application specific settings, every annunciator of the variant WAP-P can be parameterised by PC-software (Browser). In addition to the settings by DIP-switch numerous additional settings are available:
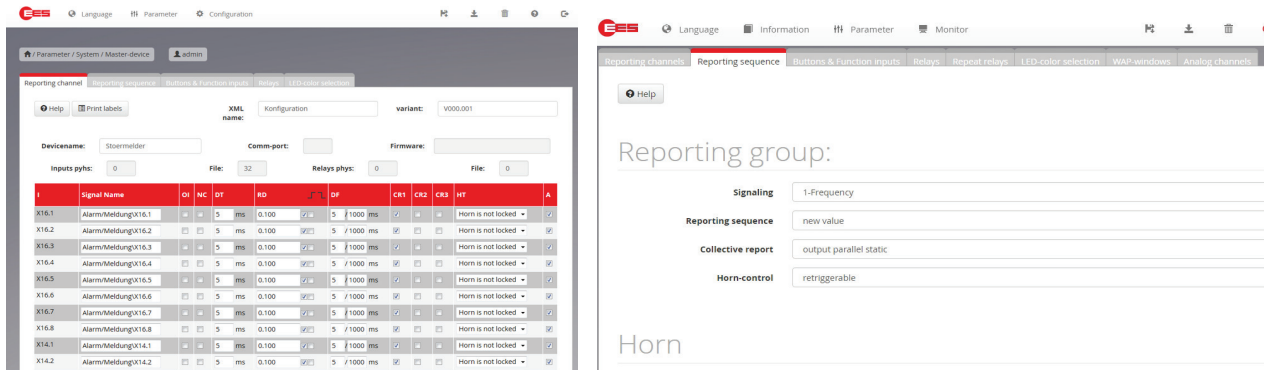
For each single alarm channel the following parameters can be set:

- Signal name (labelling)
- Operation indication or fault annunciation
- Debouncing delay (debouncing time)
- Normally closed or normally open contact
- Alarm delay
- Defluttering
- Assignment to collective reports 1, 2 or 3
- Horn triggering

The alarm sequence can be compiled from the following components:

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

The following settings can be done for the horn triggering:

Function	Option	Description
Internal horn	Active	Internal horn is activated.
	Inactive	Internal horn is deactivated.
Horn triggering	Retriggerable	Horn is triggered by subsequent alarm, even if there are already alarms at issue.
	Not retriggerable	Horn is triggered by subsequent alarms only if no alarms are at issue.
Horn lock	Inactive	Horn can always be acknowledged.
	Active	Alarm can only be acknowledged once the horn has been acknowledged.
Horn acknowledge	Manual (continuous tone)	Horn is acknowledged manually by button or function input.
	Automatic (pulse tone)	Horn is acknowledged automatically according to the set time.
Horn mute	Horn not triggered	Horn is not triggered as long as horn mute is activated.
	Automatic (pulse tone)	Horn is acknowledged automatically after the set time as long as horn mute is activated.

Two functions can be parameterized for the **unmanned operation** of a plant:

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 to set the function 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 messages are switched off and the alarm acknowledgement on the fault annunciator is deactivated at all.

The different alarm sequences use different options for forming **collective reports**. In principle, the following variants may be used:

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 and reset independently from the state of the alarms by acknowledgement.

The following functions can be assigned to the **buttons and function inputs.** Multiple assignments are possible:

- Acknowledgement lamps Group[*] 1, 2 or 3 or unassigned alarms
- Reset Group[*] 1, 2 or 3 or unassigned alarms
- Acknowledgement horn
- Lamptest
- Function test
- Mute horn
- Unmanned operation

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

Three of the total of **4 function relays** can be assigned to functions. The 4th relay is fixed as live relay configured. Multiple assignments are possible:
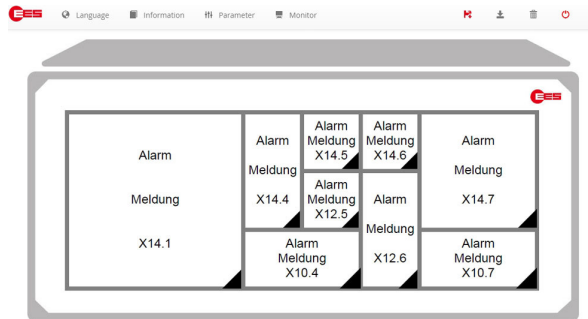
- Collective report 1, 2 or 3
- Triggering of an external horn
- Control of relays by a function input (1 or 2)
- Triggering through one of the buttons 1…6 (statically, as long as button is pressed or as a bistabile relay, toggles on each operation of the button)
- Inversion of the relay function is possible

Window size (24 WAP only)

The number and size of the windows of the WAP 24 can be individually parameterised. On delivery, the size of each of the 24 windows is 28 x 28 mm. A window can be enlarged by covering adjacent windows. The relevant alarm input to the newly created window is the window that was enlarged. The alarms of the windows that were covered by the newly created window are not processed.

Window colour

The color of the displayed messages can be defined individually for each window. The color can be defined for each of the three message states "Off", "On" and "Flashing". In addition to the "off" state (no LED controlled), the following colours are available: red, green, yellow, blue, orange and white.

Parameter Import from Excel

In addition to the manual parameterisation as described in the last sections, the alarm specific settings and even communication parameters for the WAP-K can also be imported from Excel. EES provides a template that can be filled in and processed with common procedures in order to save time and reduce causes of failure during the parameterisation process.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Index	Geräte-nummer	Eingang	Beschriftung1	Beschriftung2	Betriebs-meldung	Ruhe-strom	Ansprech-verzoegerung	Melde-verzoegerung	kommend	gehend	Flatter-anzahl	Flatter-zeit	Sammel1	Sammel2	Sammel3	Hupe keine
2	idx	device number	input	signal name1	signal name2	operation	normally closed	debounce time	response delay	edge rising	edge falling	deflutter number	deflutter time	collective report1	collective report2	collective report3	horn not active
3	1	0	1	Alarm/Meldung	X20.8	x			5 0.100	x		5	1000	x			
4	2	0	2	Alarm/Meldung	X20.7		x		5 30	x	x	5	1000	x			
5	3	0	3	Alarm/Meldung	X20.6	x			5 0.100	x		5	1000	x			
6	4	0	4	Alarm/Meldung	X20.5				5 0.100	x		5	1000	x			
7	5	0	5	Alarm/Meldung	X20.4	x			5 0.100	x		5	1000	x			
8	6	0	6	Alarm/Meldung	X20.3				5 0.100	x		5	1000	x			
9	7	0	7	Alarm/Meldung	X20.2	x			5 0.100	x		5	1000	x			
10	8	0	8	Alarm/Meldung	X20.1				5 0.100	x		5	1000	x			
11	9	0	9	Alarm/Meldung	X18.8	x			5 30	x	x	5	1000	x			
12	10	0	10	Alarm/Meldung	X18.7				5 0.100	x		5	1000	x			
13	11	0	11	Alarm/Meldung	X18.6	x			5 0.100	x		5	1000	x			
14	12	0	12	Alarm/Meldung	X18.5				5 0.100	x		5	1000	x			
15	13	0	13	Alarm/Meldung	X18.4	x			5 0.100	x		5	1000	x			
16	14	0	14	Alarm/Meldung	X18.3		x		5 0.100	x		5	1000	x			
17	15	0	15	Alarm/Meldung	X18.2		x		5 0.100	x		5	1000	x			
18	16	0	16	Alarm/Meldung	X18.1		x		5 0.100	x		5	1000	x			
19	17	0	17	Alarm/Meldung	X16.8		x		5 0.100	x		5	1000	x			
20	18	0	18	Alarm/Meldung	X16.7				5 0.100	x		5	1000	x			
21	19	0	19	Alarm/Meldung	X16.6				5 0.100	x		5	1000	x			
22	20	0	20	Alarm/Meldung	X16.5				5 0.100	x		5	1000	x			
23	21	0	21	Alarm/Meldung	X16.4				5 0.100	x		5	1000	x			
24	22	0	22	Alarm/Meldung	X16.3				5 0.100	x		5	1000	x			
25	23	0	23	Alarm/Meldung	X16.2				5 0.100	x		5	1000	x			
26	24	0	24	Alarm/Meldung	X16.1				5 0.100	x		5	1000	x			
27	25	0	25	Alarm/Meldung	X14.8				5 0.100	x		5	1000	x			
28	26	0	26	Alarm/Meldung	X14.7				5 0.100	x		5	1000	x			
29	27	0	27	Alarm/Meldung	X14.6				5 0.100	x		5	1000	x			
30	28	0	28	Alarm/Meldung	X14.5				5 0.100	x		5	1000	x			
31	29	0	29	Alarm/Meldung	X14.4				5 0.100	x		5	1000	x			

EES_Input / EES_Relay / EES_Collective

## Optional protocol interface (24 WAP-P only)

The WAP-P with 24 alarms can optionally be equipped with a Modbus RTU interface (parameterizable RS232 or RS485) with pluggable terminals. As a Modbus slave, the fault annunciator can use this interface to transmit states to higher-level systems as well as to display and process messages from other devices. The communication partners must be designed as Modbus masters.

Cascading

With the cascading functionality up to four WAP can be grouped to an annunciating system by connecting the WAP via the systembus provided at the CAN-Bus sockets. One WAP-K works as "master" and the connected WAP-P work as "slave". Thus systems with up to 96 signal inputs (4*24) 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. Cascading multiplies the number of function inputs according to the number of devices. Type WAP-K fault annunciators can only be operated as master within a cascaded fault annunciating system.

General design of a cascaded fault annunciator system:
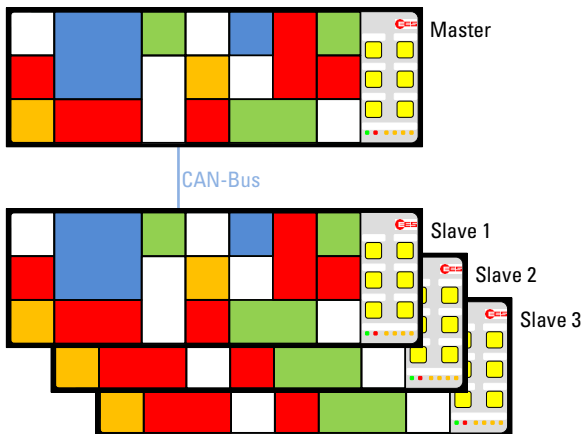
The parameterisation is done at once via the browser-based software. Only the master device has to be connected, the parameterisation will automatically be distributed to the slave devices.

→ WAP-K: Annunciator with protocol interfaces

The WAP-K resembles the WAP-P in general functionality. For communication with superior or inferior systems (e.g. SCADA or control systems) the WAP-K is equipped with one or two communication cards. The communication cards provide the following interfaces:

Card 1 (equipped as standard)
- 1 x Ethernet / RJ45
- 1 x RS232 / pluggable terminal
- 2 x USB-A
- 1 x CAN-Bus / RJ45
- 1 x USB-B (factory interface)

Card 2 (optionally equipped)
- 1 x Ethernet / RJ45
  (alternatively available as optic interface of SC-type)
- 1 x RS232 or RS485 / pluggable terminal (serial protocol interface)

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

- Modbus RTU/TCP (fault annunciator is Modbus slave)
- IEC 60870-5-101 (annunciator is IEC-slave)
- IEC 60870-5-104 (annunciator is IEC-server or client)
- IEC 61850 (annunciator is IEC-server)

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.

1. WAP-K as acquisition device
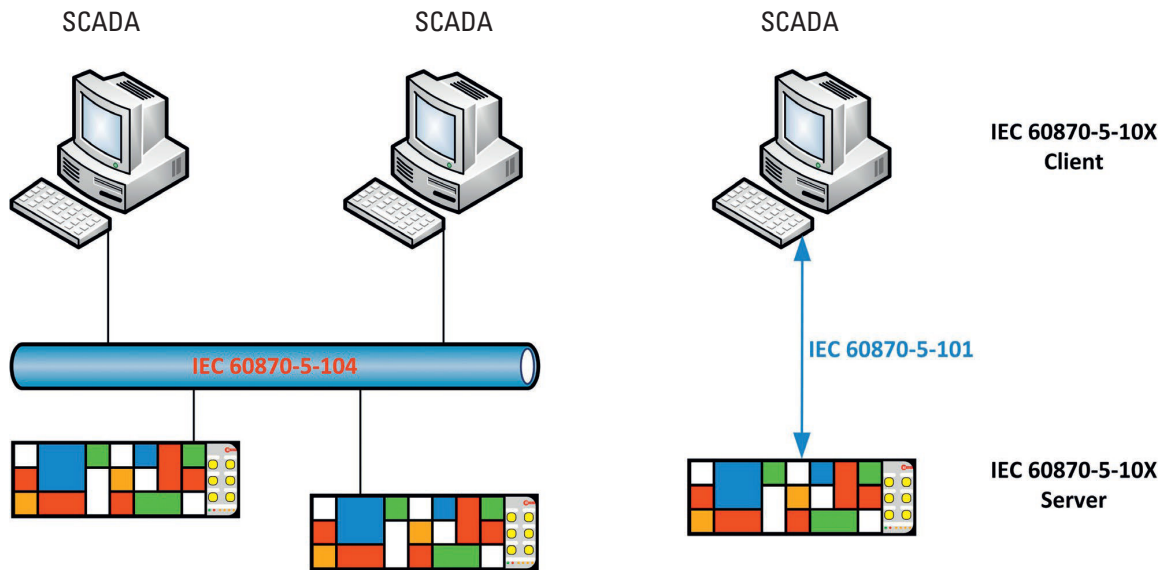
In the application example above, the WAP-K annunciators work as acquisition devices, which processes and displays alarms locally. In addition the alarms are forwarded to the SCADA level through IEC 60870-5-101 or -104.

▶ The alarm channels can either be triggered from the galvanic signal input or from the IEC interface. Which of these options is used, can be parameterised individually for each channel. Acknowledgement through the IEC interface is possible as well.

2. WAP-K as indication device
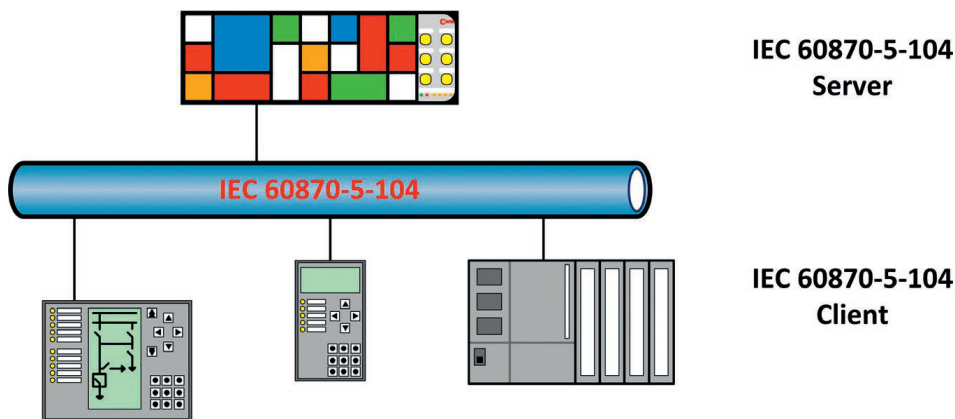
In this application example the WAP-K processes and displays alarms that are retrieved from the IEC interface. Thus, a secondary wiring of the alarms is not necessary.

3. WAP-K in IEC 61850 structures

The IEC 61850 protocol is used in automated switchgear to transmit information from field and protective devices. In addition, various individual messages are generated which - depending on the type of message - 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 annunuciator of the WAP-K series perform this "ragman" function. Here individual messages, with the aid of the optional analog inputs and also measured values can be transmitted. Individual reports and datasets can be configured to provide all relevant information about the message and device status. In addition, the WAP-K can be configured as 61850 watchdog for third-party devices. A configurable time is monitored during the external device must periodically report to the WAP-K. If the time is exceeded, a freely assignable digital input is activated.

Individual reports and datasets can be configured easily which contain all relevant information about the alarm and device status.
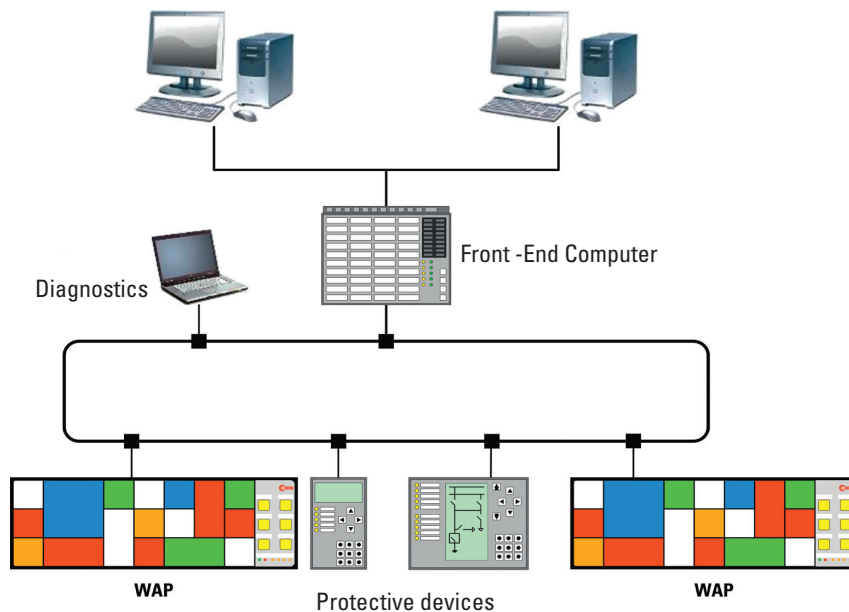
With the optionally available software license IEC 61850 the WAP-K can be integrated into IEC 61850 structures.

4. CID-Creator

Every annunciator of the series WAP-K 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. When creating the file, you can choose between editions 1.0, 2.0 and 2.1 of the IEC standard.
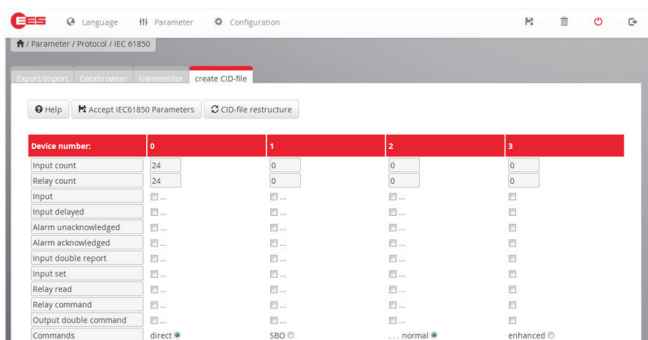
5. Integrated Web Server

The WAP-K provides an integrated Web-Server. Thus the parameterisation can be done via network with all current web browsers. All annunciator and interface parameters are available on the web-server and can be parameterised through it. No additional software or special cables are required!
Service-access and online-monitoring are additional functions that are provided by the integrated web-server.

6. IP-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. This optional "IP Security" feature is designed to meet these requirements. For this the following functions were added or extended:

• Password management
• Firewall settings
• Certificate management
• File transfer via SFTP (Secure File Transfer Protocol)
• Communication using HTTPS (Hypertext Transfer Protocol Secure)

→ Labelling

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

The designation foil with signal names can be created and printed directly from the parameterisation interface or generated manually from labelling strips in Word-format.
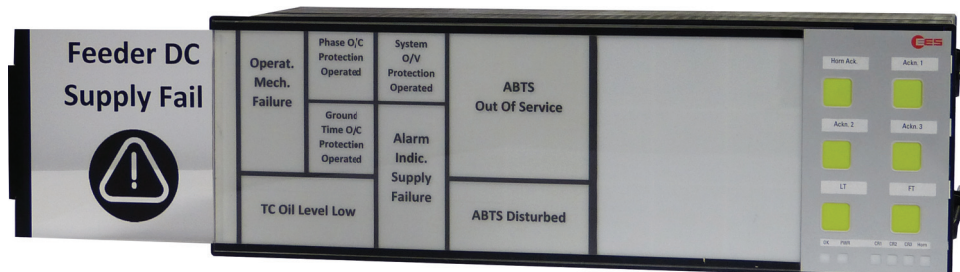
→ Available Options

1. Redundant power supply

Independent from the primary power supply, a second -redundant- power supply can be integrated into the fault annunciator. Two different voltages 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. 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 Status-LEDs on the annunciator front. Additionally the application of the supply voltage for both power supplies are indicated by a LED each on the rear side of the device. For the annunciators of the series WAP-K the breakdown of a power supply is also transmitted on the communication interface.

2. Additional feature cards

Optionally, analogue input cards and relay cards can be integrated into the fault annunciator. The mixed use of analogue input cards and relay cards is also possible. The possible combinations can be found in the matrix with the ordering designations further back in the data sheet.

2.1 Analog Input Cards (only available for WAP-K)

A WAP-K can be equipped with up to 3 analogue input cards, depending on the size of the device. Each input card has 4 analog inputs with 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 annunciator)

The measured values can be forwarded to a higher-level system via the Modbus RTU, IEC 60870-5-101/104 or the IEC 61850 interface. Furthermore, the measured values can be monitored and a fault message can be generated in case of a fault.

The message can be parameterized so that it is triggered at one of the following events:

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

2.2 Relay cards

The optionally integrated relay cards (8 NO contacts each) are independent from the 4 function relays of the annunciator and can – dependent of the annunciator version – be used for the following functions:

1. In- or output-parallel multiplication and forwarding of single alarms.
2. Output of the collective report or external horn triggering.
3. Triggering of the relays from the IEC-interface (only available for WAP-K).

The assignment of the relays depends from the version of the respective annunciator:

- WAP-P   - assignment of repeat relays to signal inputs individually parameterisable
- WAP-K   - free parameterization, whether a relay is controlled by any input or via the interface

The eight relay contacts on a relay card have one common root. The triggering and function of the repeat relays can be configured individually by means of the parameterisation software or web-server, respectively. An individual definition, which signal input triggers the respective relay, is possible. The assignment of repeat relays and signal inputs can either be 1:1 (one relay follows one signal input) or n:1 (multiple relays are following one signal input). Additionally, special functions like the output of a collective report or external horn triggering can be assigned to the repeat relays.

→ **Technical Data**

Supply voltage U$_{Sup}$

Key	Rated voltage	Voltage range
1	24 V AC/DC	19…37 V DC or 14…26 V AC
2	48 V AC/DC or 60 V DC	37…73 V DC or 26…51 V AC
5	110 V AC/DC or 220 V AC/DC	88…370 V DC or 85…264 V AC

Signal voltage U$_S$

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

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

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 contact
Load capacity	24 … 250 V AC 2 A; 110 V DC 0,5 A; 220 V DC 0,3 A

Power consumption

Number of channels	Power consumption [W]			
	WAP-P	WAP-P with integrated repeat relays	WAP-K	WAP-K with integrated repeat relays
24	< 5	< 13	< 10	< 17

General data

Buffer time in the event of failure / short circuit	100 ms*
response delay	adjustable (5 ms … 9 h)
Flashing fequency	
fast flashing	2 Hz
slow flashing	0,5 Hz
Ethernet interface	100 Base-T / RJ45

Mechanical Data

Number of Signal Inputs	Front frame H x W x D [mm]	Front panel [mm]	Depth with front frame and terminals [mm]	Weight [kg]
4	96 x 96 x 8	92 x 92	132	approx. 0,90
6	96 x 96 x 8	92 x 92	132	approx.0,90
8	96 x 96 x 8	92 x 92	132	approx. 0,90
24	96 x 287 x 8	92 x 282	135	approx. 0,90

Mounting	panel mounting
Required installation depth	155 mm
Minimum horizontal gap	
Between 2 devices	15 mm
Connection terminals	pluggable
Wire cross section rigid or flexible	
Without wire sleeves	$0,2 … 2,5 \ mm^2$
With wire sleeves	$0,25 … 2,5 \ mm^2$

Ambient environment

Operating ambient temperature	-20°C .... +60°C
Storage temperature	-20°C .... +70°C
Duty cycle	100 %
Protection class at the front	IP 54
Protection class at the rear	IP 20
Humidity	75% r.h. max. on average over the year; up to 93% r.h. during 56 days; condensation during operation not permitted [Test:40°C, 93% r.h. > 4 days]

Dielectric strength

Voltage dielectric strength	
RS232/RS485 interface against	
Digital Inputs	4 kV AC / 50 Hz 1 min
Analog Inputs	1kV AC / 50Hz 1min (functional insulation)
Relay contacts	4 kV AC / 50 Hz 1 min
Supply (110 / 230V AC/DC)	3,0 kV AC / 50 Hz 1 min
Supply (12 / 24 / 48 V AC/DC)	1,0 kV AC / 50 Hz 1 min
Relay contacts against each other	500 V / 50 Hz 1 min
Impulse withstand strength	
RS232/RS485 against	
Digital Inputs	2,5 kV ; 1,2 / 50 µs; 0,5 J; acc. to IEC60255-5:2000
Analog Inputs	1kV AC / 50Hz 1min (functional insulation)
Relay contacts	2,5 kV ; 1,2 / 50 µs; 0,5 J; acc. to IEC60255-5:2000
Supply	2,5 kV ; 1,2 / 50 µs; 0,5 J; acc. to IEC60255-5:2000
Relay contacts against each other	500 V ; 1,2 / 50 µs; 0,5 J; acc. to IEC60255-5:2000

Electromagnetic Compatibility

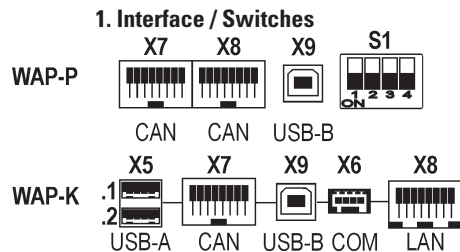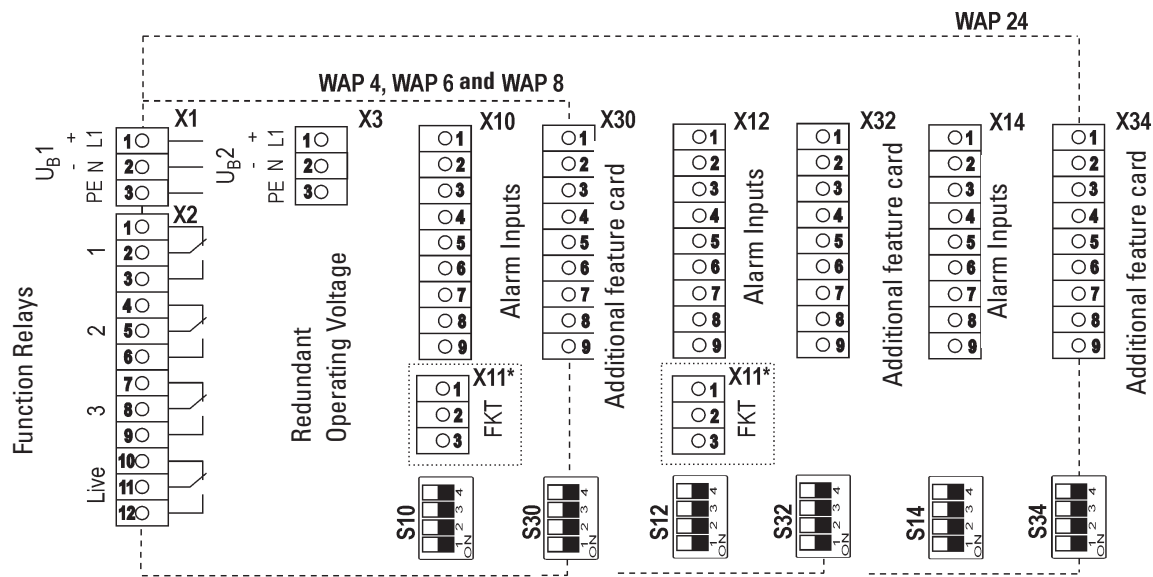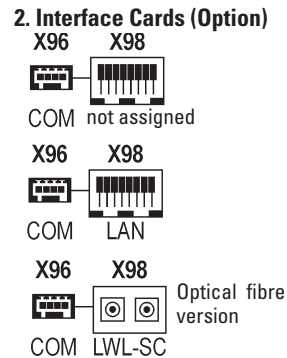| Noise immunity acc. to	DIN EN 61000-4-2:2009
	DIN EN 61000-4-3:2011
	DIN EN 61000-4-4:2013
	DIN EN 61000-4-5:2007
	DIN EN 61000-4-6:2009
	DIN EN 61000-4-8:2010
	DIN EN 61000-4-11:2005
	DIN EN 61000-4-12:2007
Noise irradiation acc. to	DIN EN 61000-3-2:2011
	DIN EN 61000-3-3:2012
	DIN EN 55011:2011
	DIN EN 55022:2011

The devices are designed and manufactured for industrial applications according to EMC-standard.

Terminal assignment

WAP

Function Relays

U_B1
- +
PE N L1

X1
1 2 3

X2
1 2 3 4 5 6 7 8 9 10 11 12

Live

U_B2
- +
PE N L1

X3

Redundant Operating Voltage

WAP 4, WAP 6 and WAP 8

WAP 24

X10
1 2 3 4 5 6 7 8 9
Alarm Inputs

X11*
1 2 3
FKT

S10
1 2 3 4
ON

X30
1 2 3 4 5 6 7 8 9
Additional feature card

S30
1 2 3 4
ON

X12
1 2 3 4 5 6 7 8 9
Alarm Inputs

X11*
1 2 3
FKT

S12
1 2 3 4
ON

X32
1 2 3 4 5 6 7 8 9
Additional feature card

S32
1 2 3 4
ON

X14
1 2 3 4 5 6 7 8 9
Alarm Inputs

S14
1 2 3 4
ON

X34
1 2 3 4 5 6 7 8 9
Additional feature card

S34
1 2 3 4
ON

Terminal assignment

F1
F2
- / N
1 2 3
FKT

E1
E2
E3
E4
E5
E6
E7
E8
- / N
1 2 3 4 5 6 7 8 9
Alarm Inputs

Additional feature card

E1+
E1-
E2+
E2-
E3+
E3-
E4+
E4-
GND
1 2 3 4 5 6 7 8 9
Analog Inputs

1 2 3 4 5 6 7 8 9
Repeat Relays

Subject to technical changes without prior notice.

1. Interface / Switches

WAP-P
X7 X8 X9 S1
CAN CAN USB-B 1 2 3 4 ON

WAP-K
X5 X7 X9 X6 X8
.1 .2
USB-A CAN USB-B COM LAN

*Terminal X11 - Funktion inputs is located
for WAP4-8 under terminal X10
for WAP 24 under terminal X12

2. Interface Cards (Option)

X96 X98
COM not assigned

X96 X98
COM LAN

X96 X98
COM LWL-SC
Optical fibre version

WAP-P on the CAN bus sockets X7 and X8, a system bus is available for expansion modules or for setting up cascaded fault indication systems.

WAP-K at the CAN-bus socket X7, a system bus is available for expansion modules or for setting up cascaded fault indication systems.

The DIP switches S30, 32 and 34 are only included on relay cards. If these are not available, the corresponding DIP switches are also omitted. The WAP-K is only parameterised via the internal web server and therefore does not have DIP switches.

Assignment of the function relays (factory setting)
Relay 1: all collective
Relay 2: not used
Relay 3: external horn
Relay 4: Live contact

Assignment COM as RS232
1- Shield (optional)
2- RX
3- TX
4- GND

Assignment COM as RS485
1- Shield (optional)
2- A
3- B
4- GND
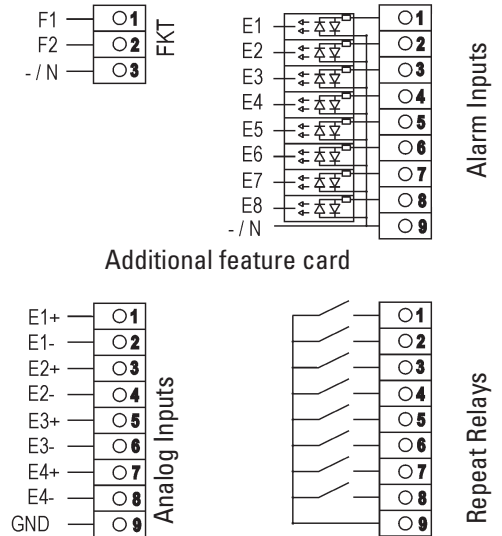
→ Ordering Code

59	W	x	x	x	x	x	x	x	x	x		
											Number of Signal Inputs	
		4									4 Signal Inputs	
		6									8 Signal Inputs	
		8									16 Signal Inputs	
		C									24 Signal Inputs	
											Supply Voltage	
			1								24 V AC/DC	
			2								48 - 60 V AC/DC	
			5								110 - 220 V AC/DC	
											Signal Voltage	
				1							24 V AC/DC	
				3							48 - 60 V AC/DC	
				4							110 V AC/DC	
				H							125 V AC/DC	
				5							220 V AC/DC	
				W							50V - 250 V AC/DC wide range	
											WAP-P	
					0	P					Standard version WAP-P	
											IT Security options only fpr WAP-K	
					E						Basic version WAP-K, no IT security functionality	
					S						Security configuration, security functionality included	
					P						Port Security, enhanced security configuration incl. option S *2	
											1. Interface card only for WAP-K	
						W					Communication interface Modbus RTU/TCP + IEC 60870-5-101/-104	
						F					Communication interface Modbus RTU/TCP + IEC 60870-5-101/-104 + IEC 61850	
											2. Interface card only for 24 WAP -K	
							0				Not equipped	
							W				Modbus RTU/TCP + IEC60870-5-101/-104	
							F				Modbus RTU/TCP + IEC60870-5-101/-104 + IEC 61850 *1	
							L				IModbus RTU/TCP + IEC60870-5-101/-104, Optical fibre -SC-socket	
							G				Modbus RTU/TCP + IEC60870-5-101/-104 + IEC 61850, Optical fibre-SC-socket *1	
								R			RGB-LED, Colour parameterisable	
											Optional feature cards	
									0		no repeat relays and no analog cards	
									R		8 repeat relays (for annunciator with 4, 6 and 8 signal inputs)	
									R		24 repeat relays (for annunciator with 24 signal inputs)	
									1		8 repeat relays (for annunciator with 24 signal inputs)	
									2		16 repeat relays (for annunciator with 24 signal inputs)	
									A		4 analog inputs (for annunciator with 4,6 or 8 signal inputs)	
									A		12 analog inputs (for annunciator with 24 signal inputs)	
									3		4 analog inputs (for annunciator with 24 signal inputs)	
									6		4 analog Inputs + 16 repeat relays (for annunciator with 24 signal inputs)	
									7		8 analog Inputs + 8 repeat relays (for annunciator with 24 signal inputs)	
											Redundant Power Supply	
										0	No redundant power supply	
										1	24 - 60 V AC/DC	
										5	110 - 220 V AC/DC	

59	W									

*1 Communication via IEC 61850 is only available on one network interface, regardless of the total number of interfaces of the fault annunciator

*2 availability on request

Example for ordering

59WC550W0RR1   WAP-K with 24 signal inputs and communication interface card

Supply voltage 220 V / Signal voltage 220 V
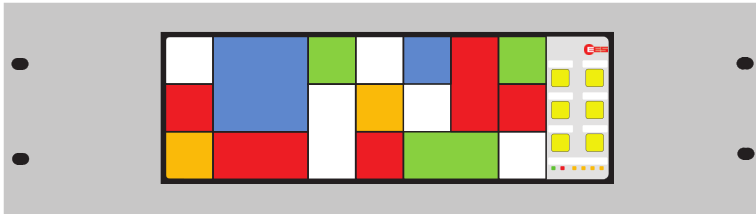
No 2nd interface card equipped RGB-LEDs

Integrated repeat relays

Redundant power supply 24 – 60 V

Art. No. 59ZLICP61850 - License for communication through IEC 61850

→ **Accessories**

Frontplates for 19"-rack-mounting

In order to be able to use the fault annunciator in 19" systems as well, we offer a variety of dummy and front panels with different sections. We seperate in:

> • Blanking plates, which are attached to a 19" system instead of a subrack

and

> • Front panels, that are integrated into an existing subrack

Transparent film for message labelling

Transparent foils for slide-in labelling of the alarm windows. Laser-printable.

Ordering code: 58ZFPWAP-01

Parameterization accessories for WAP-P

Ordering code: 59ZUSB20A-B   Parameter adjustment cable for connection of parameterizable WAP-P fault annunciator to the PC.
Type USB-A to USB-B.

Ordering code: 97ZPSoftPara   We will gladly send you our software DVD. Alternatively, the parameterization software can be downloaded from our homepage (www.ees-online.de).

Patch-cables for cascading
For connecting multiple annunciators to a cascaded alarm system, connection cables in different lengths can be supplied. In case of deviant lengths required, kindly contact our service-team.

Ordering code: K118-0.5   (0.5 m)
                      K118-1   (1 m)
                      K118-3   (3 m)
                      K118-5   (5 m)