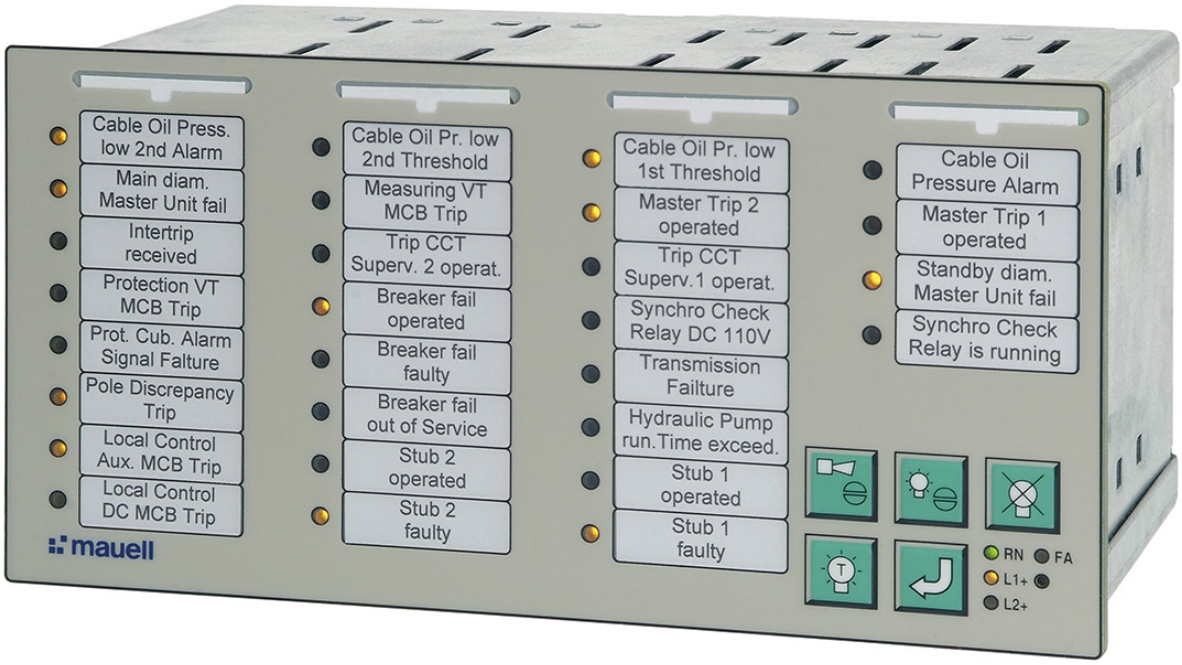

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Application

The ME 3011C *Digital Alarm Annunciator* module is for registering signals, alarms, states and events from electrical systems. The gathered information can be provided locally via LED's and horn. These information's can also be provided as a group alarm or distributed via a network.

Features

- **High degree of modularity, 12 up to 60 alarms can be configured**
- **4 different housing options**
- **Front panel with keypad, LED and sound**
- **easy to replace alarm-text on printable paper stripes**
- **Configuration via PC software**
- **RS 485 Modbus RTU interface for communication with up to 15 modules**
- **RS 232 Interface X5 for configuration**
- **Flashing synchronization input/output**
- **GPS synchronization input**
- **DC and AC power supply possible**
- **Wide range power supplies from 24 V DC up to 230 V AC**
- **Monitoring of power supply (RLFL) for AC/DC and display via light and sound**
- **3 programmable relay outputs for collective annunciation (group alarm)**
- **Plugs with spring-cage connector**
- **Isolated power supplies and signals**

The following options are possible:

- **RS 232 Interface X1 for different protocols such as IEC 60870-5-101**
- **Ethernet X2 interface for different protocols such as IEC 60870-5-104**
- **Event register for up to 1000 events**
- **9 relay outputs configurable for group alarms**
- **Repeater relays for each alarm point**
- **Switch-ON and OFF delay**

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Important Safety Information!

The device description must be read and understood prior to any installation or operation. Installation, wiring, commissioning and maintenance of the *Digital Alarm Annunciator* module should only be carried by qualified personnel, authorized by the plant owner and under strict compliance with the relevant standards and safety regulations. Any installation works should only be carried with the system disconnected from the mains supply. Please don't hesitate to contact us if you have questions or need any further information.

CE The product described in this brochure is intended for industrial use and meets the requirements laid down by the EU directive 2004/108/EC.

Note to this Guide

This guide describes the system ME 3011C with different device variants.
Depending on the wide range of hardware-configuration, there is a nearly endless amount of different systems. This document only describes a few of the possibilities.

Further Information

Beside this ***Quick Reference Guide***, there is a more extensive ***Instruction Manual*** and a ***Software Manual*** for the ***e.Tool ME3011*** configuration (available from our webspace www.mauell.bilfinger.com).

Device Variants

Each device variant has different options.

	Signal delay	Group alarm 7-15	Interface card
ME 3011C			**X**
ME 3011C**+**	**X**		**X**
ME 3011C***R***	**X**	**X**	

ME 3011C Current version, which will be replaced, by the variants ME 3011C**+** and ME 3011C***R***.

ME 3011C+ New variant. In addition to the possibilities of the ME 3011C, individual signal delays for the single messages are available.

ME 3011C*R* New variant. In addition to the possibilities of the ME 3011C**+**, nine additional group alarm relays are available.
The optional interface card is not available, because the additional relay card uses the same slot.

General Functions

Sound Signal
The Digital Alarm Annunciator has a horn/buzzer which can be configured to generate different sounds.
Potential-free connectors are available on the rear panel for connecting an external horn.

Group Alarm
The group alarm function (annunciation collective) is used to combine inputs for a purposeful monitoring.
A certain group alarm can have its own light indication and sound signaling.
The *Digital Alarm Annunciator* comes standard with three relays, which can be configured to be activated if an alarm occurs in one of the three alarm groups. Via an optional annunciator module, 9 additional group alarms can be outputted.

Sleep Mode - SLM
The **SL**eep **M**ode is used to deactivate internal light and/or sound signaling.
When active, the green RUN LED is flashing, indicating the sleep mode.
The SLM can be disabled with every button.

Switch-ON and OFF delay
For the system variants ***C+*** and ***CR***, a signal delay time can be configured for each signal.

Input Temporization
Every input has a signal delay filter, which enables a tripping time hysteresis from 5 ms up to 600 ms in 2.5 ms steps.

LED Signaling
Light signaling has two flashing frequencies
Normal flashing: circa 1.2 Hz
Slow flashing: circa 0.4 Hz
External synchronization is optionally possible.

Keyboard OFF
Allows turning off the *Digital Alarm Annunciator* keypad by an external key-switch. Only remote push-buttons are still enabled.

Protocol interfaces
By using the optional interface module, the alarm system can use communication protocols via IEC 60870-5-101 (serial) and IEC 60870-5-104 (Ethernet).
The protocol converter of the interface module works independently from the Digital Alarm Annunciator.
It is separately configured via the Ethernet interface by using a web browser.

Annunciator Sequences - ISA 18.1

The **I**nstrumentation, **S**ystems, and **A**utomation Society (ISA) is a global, non-profit organization for setting the standards for automation.

The purpose of the ISA 18.1 standard is to establish uniform annunciator terminology, sequence designations, and sequence presentation and to assist in the preparation of annunciator specifications and documentation.

This Standard is intended to improve communications among those that specify, distribute, manufacture, or use annunciators.

The Digital Alarm Annunciator can be configured for 16 signaling sequences.
The most important are the following 7:
ISA-RP 18.1/(ISA-S18.1) see page 10-16
ISA 1/(A), ISA 1A/(A-5),
ISA 1B/(A-4), ISA 2A/(R-8),
ISA 2C/(M) default
ISA 4A/(F1A), ISA 4AR/(F1M)
etc.
Other sequences can be implemented on request.

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Plan of Terminal Connections

Clamp	Pin	Title	Meaning
X1	1-9	D-Sub male	RS 232 Interface, for example, IEC 60870-5-101 protocols
X2		RJ45 female	Ethernet interface, for example, IEC 60870-5-104 protocols
X3	1	Sync	GPS or Flashing Synchronization
	2	RT–	Modbus Interface RS 485
	3	RT+	
X4			Inputs for remote Pushbuttons
	1	M	common root is (+24 V DC)
	2	SLM	Sleep Mode
	3	HA	Horn Acknowledge
	4	LA	Lamp Acknowledge
	5	RE	Lamp Reset
	6	FT/LT	Function Test / Lamp Test
	7	KB/O	Keypad OFF (Key switch)
X5		RJ10	Serial interface RS 232 (cable CS-02) for Config-PC
X6	1-12	I1-I12	Alarm Inputs 1-12
	13	M	common root (GND)
X7	1-12	R1-R12	Repeater Outputs 1-12
	13	L+	common root (+)
X8			Power Supply Inputs +24 V up to +60 V DC
	1	L1+	First supply voltage
	2	L2+	Second supply voltage
	3	M	GND
	4	+24V DC	24 V Power supply output - auxiliary field supply
	5	–24V DC	24 V root (GND)
X8 option single			Power supply Inputs ***single*** 110 V up to 230 V
	1	L1+	Supply voltage (AC/DC) L1
	2	L1–	Ground for L1
	3	NC	not contacted
	4	+24V DC	24 V Power supply output - auxiliary field supply
	5	–24V DC	24 V root (GND)
X8 option redund.			Power supply Inputs ***redundant*** 110 V up to 230 V
	1	L1+	First supply voltage (AC/DC) L1
	2	L1–	Ground for L1
	3	L2+	Second supply voltage (DC) L2
	4	L2–	Ground for L2
	5	–24V DC	–24V root (GND)
			Programmable relay outputs (Annunciation collective, Horn)
	6	RL4a	Relays 1
	7	RL4b	
	8	RL5a	Relays 2
	9	RL5b	
	10	RL6a	Relays 3
	11	RL6b	
	12	RLFL2+	Relays output for voltage monitoring L2
	13	RLFL1+	Relays output for voltage monitoring L1
	14	L+	common ground for RLFL

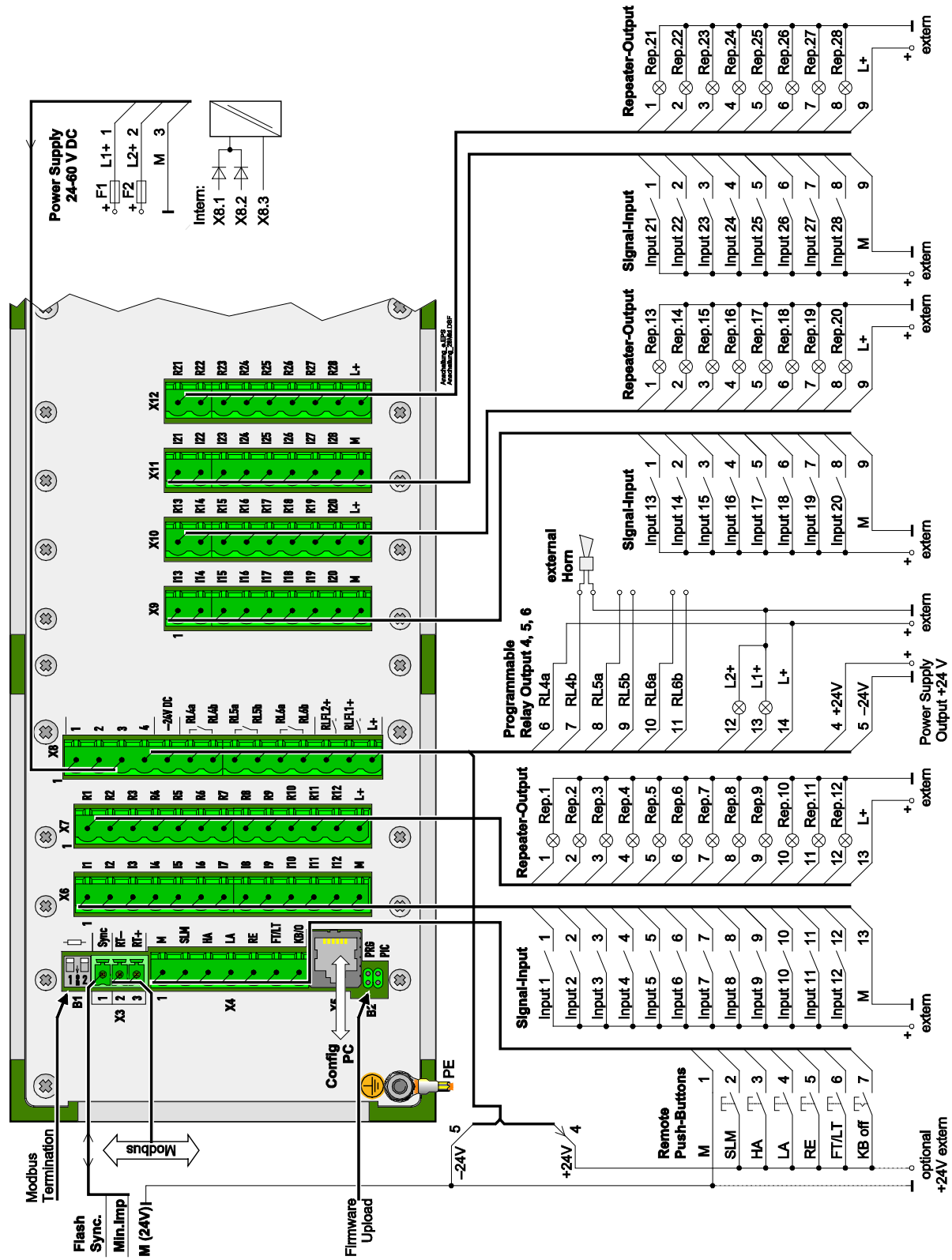
optional

Plan of Terminal Connections Part 2

Clamp	Pin	Title	Meaning
X9	1-8 9	I13-I20 M	Alarm Inputs 13-20 common root (GND)
X10	1-8 9	R13-R20 L+	Repeater Outputs 13-20 common root (+)
X11	1-8 9	I21-I28 M	Alarm Inputs 21-28 common root (GND)
X12	1-8 9	R21-R28 L+	Repeater Outputs 21-28 common root (+)
X13	1-8 9	I29-I36 M	Alarm Inputs 29-36 common root (GND)
X14	1-8 9	R29-R36 L+	Repeater Outputs 29-36 common root (+)
X15	1-8 9	I37-I44 M	Alarm Inputs 37-44 common root (GND)
X16	1-8 9	R37-R44 L+	Repeater Outputs 37-44 common root (+)
X17	1-8 9	I45-I52 M	Alarm Inputs 45-52 common root (GND)
X18	1-8 9	R45-R52 L+	Repeater Outputs 45-52 common root (+)
X19	1-8 9	I53-I60 M	Alarm Inputs 53-60 common root (GND)
X20	1-8 9	R53-R60 L+	Repeater Outputs 53-60 common root (+)
X21	 1 2	 RL7a RL7b	Programmable relay outputs (Annunciation collective, Horn) Relays 7
	2 4	RL8a RL8b	Relays 8
	5 6	RL9a RL9b	Relays 9
	7 8	RL10a RL10b	Relays 10
	9 10	RL11a RL11b	Relays 11
	11 12	RL12a RL12b	Relays 12
	13 14	RL13a RL13b	Relays 13
	15 16	RL14a RL14b	Relays 14
	17 18 19	RL15a RL15b L+	Relays 15 common ground for RL15
B1	1 2	Terminator Terminator	Terminating resistor for Modbus Terminating resistor for Modbus
B2	1+2 1+2	PRG PIC	Firmware Upload
	⏚	PE	Protective Earth. Have to be connected with low-resistance!

optional

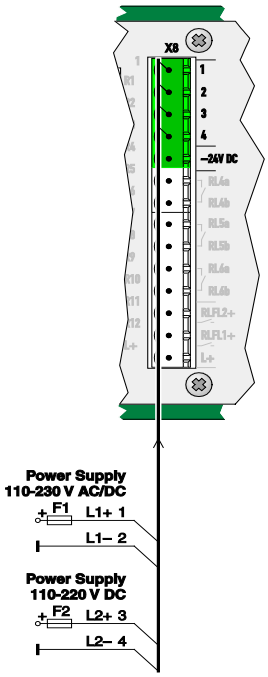
Wiring for the Alarm Annunciator
24-60 V Supply (Standard)



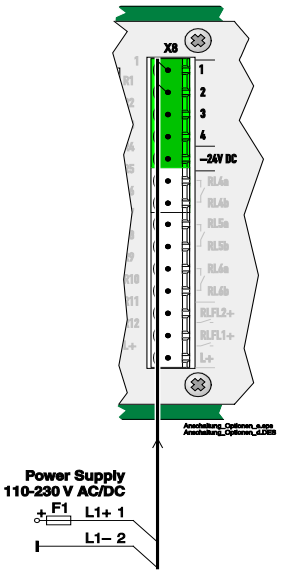
Some plugs (base housing) are optional. For example, the repeater outputs can be omitted.

Power Supply 110-230 V AC/DC

Redundant

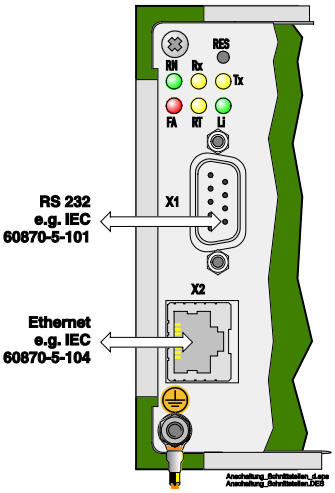


Single



The redundant DC power supply is optional. But this eliminates the +24 V output (X8.4-5) of the auxiliary voltage.

Interface Module

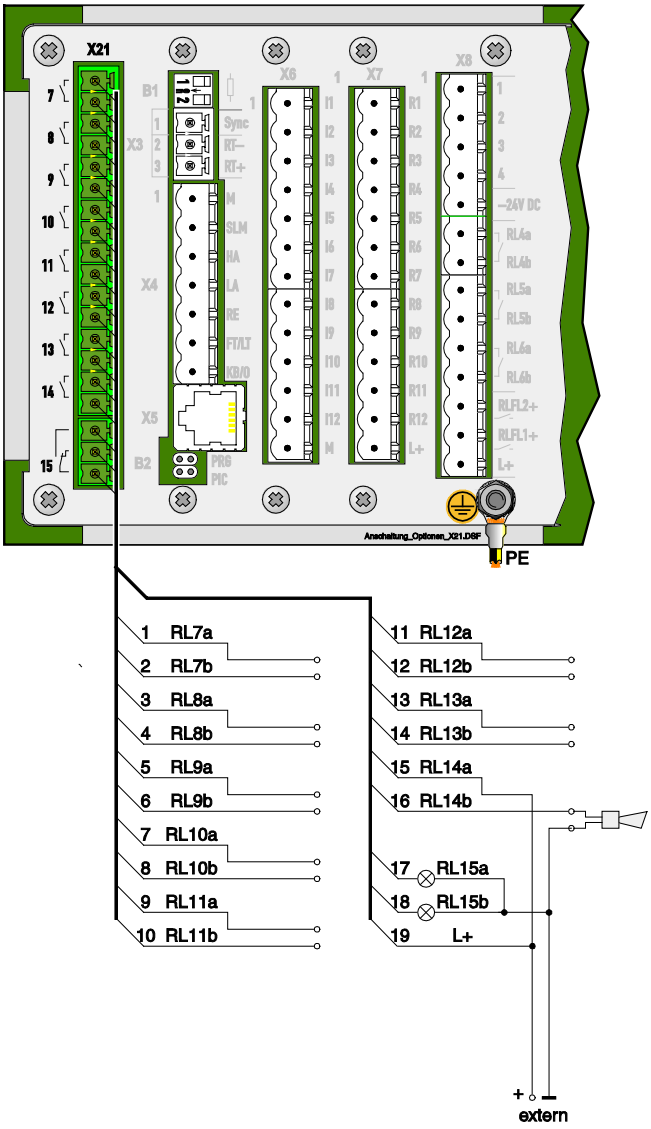


The interface module is optional.
If the collective annunciations module is used, no interface module can be used, because the group alarm module uses the same slot.

The configuration of the interface module is described in the user manual ***Protocol Converter IEC 60870-5-104 (-101) / ME 3011*** (1A050101.pdf).

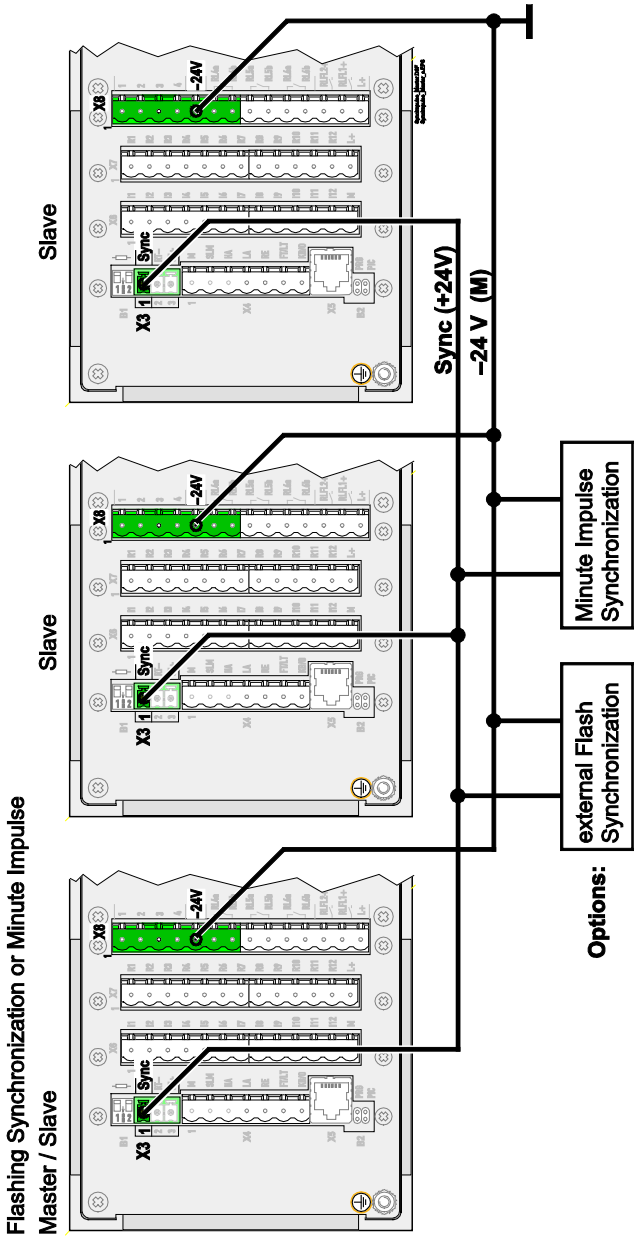
Collective annunciation ME 3011CR

The 9 additional group alarms (RL7 to RL15) are available on X21. When using the ME 3011CR, no interface module can be used, because the group alarm module uses the same slot.



For devices with this additional group alarms, the protective earth connection is on the right hand side of the module back side.

Flashing synchronization of modules



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ISA 18.1 in Detail

Alarm Sequences

ISA	Normal	Alarm	Acknowledge		Back to Normal	Back to Normal before Acknowl.	Acknowledge		Reset light
			Sound	Light			Sound	Light	
ISA 1									
ISA 1A									
ISA 1B									
ISA 2A									
ISA 2C (default)									

Sequence primary Signal (1st Event)

ISA	Normal	Alarm		Acknowledge		Back to Normal		Back to Normal before Acknowledge		Acknowledge		Reset light
		First	Subseq.	First	Subseq.	First	Subseq.	First	Subseq.	First	Subseq.	
ISA 4A												
ISA 4R												

Legend

- Horn Off
- Horn On
- LED Off
- LED On – No Flashing
- LED Normal Flashing
- LED Slow Flashing

Technical Data

Power Supply

Wattage

12 signals:	ca 5 W
28 signals:	ca 8 W
44 signals:	ca 12 W
60 signals:	ca 16 W

isolated among each other

standard

X8.1-3:	24-60 V DC ±20 %

optional

X8.1-2:	110-230 V AC/DC –20/+10 %*
X8.3-4:	110-220 V DC –20/+10 %*

Auxiliary field output

X8.4-5:	24 V DC / 75 mA only on standard power supply

monitoring

RLFL*:	24 V 110 V (only at redundancy)

Inputs

Alarm:	12, 28, 44 and 60
DC ±20 %:	24, 48, 60 V
DC –20/+10 %:	110, 220 V
Current:	typically 4 mA
Filter:	5 ms up to 600 ms
Remote-Inputs:	6 x 24 V DC (Push-Buttons)
Functions:	SLM, HA, LA, RE, FT/LT, KB/O
Sync. Flash/GPS:	24 V DC

Outputs

Horn/Buzzer:	90 dB / 10 cm, 4 kHz
Sync. Flash:	24 V DC (Flash Sync.)
RLFL1-2*:	2 Relays contacts for power supply monitoring
RL3-5, 7-15*:	3 + 9* Relay contacts programmable for, external horn, supply, alarm groups

Capacity of RLFL1-2 and RL3-5, 7-15

Relay contacts:	30V DC-1.0A ohmic load 120V DC-0.1A / 250V AC-0.5A
Repeater R1-n*:	1 Relay contact per alarm 30V DC-1.0A ohmic load 240V DC-0.1A / 250V AC-2A

Interfaces

RS 232	RJ10 - female
Baud rate:	9600, n, 8, 1
Protocol:	Modbus RTU or Modbus RTU + TS (**R**emote **T**erminal **U**nit)
RS 485	Phoenix connector
Baud rate:	100 up to 19200 baud
Parity:	even, odd or none
Stop bits:	1 or 2
Protocol:	Modbus RTU
RS 232*	9-pol D-Sub Male
Baud rate:	max. 115 kBaud
Protocol:	on request
Ethernet*	RJ45
Baud rate:	10/100 Base-Tx
Protocol:	on request

International Standards

Ambient Conditions

Storage temperature:	–20 to +80 °C
Operating temperature	0 to +55 °C
Humidity class:	0 to 95 % without moisture condensation
Protection class Front:	IP 41
Housing:	IP 30

Electromagnetic Compatibility (EMC)

Electromagnetic Immunity

DIN EN		
61000-4-2	ESD; contact discharge	4 kV
	air discharge	8 kV
61000-4-3	EM-HF-field;	10 V/m
61000-4-4	Burst	
	Signal-Inputs:	1 kV
	Power Supply:	2 kV
61000-4-5	Surge	
	Signal-Inputs sym.:	1 kV
	Power Supply sym.:	1 kV
	Power Supply asym.:	2 kV
61000-4-6	HF inflow:	10 V
61000-4-8	50 Hz magnetic fields	
	continuous field:	30 A/m

Electromagnetic Emission

DIN EN 55011 Radio noise emission Group 1, Class A

Electric Safety

DIN EN 50178	Quality requirements	
IEC 60255-5	Isolation strength	
	Signal-Inputs:	Class 3
	Power Supply:	Class 2

Connection Technology

Phoenix®-plugs:	COMBICON FKC 2,5
Maximum conductor cross section:	
one-strand	0.20 to 2.5 mm²
fine-strand	0.20 to 2.5 mm²
fine-strand	0.25 to 2.5 mm² with DIN 46 228 end splice
Phoenix®-plug:	COMBICON MC 1,5 ST (for X21, X3 Modbus & Sync.)

Event Register*

Count of events:	1000; including time stamp
Resolution:	1 ms with 2.5 ms samples

* is optional

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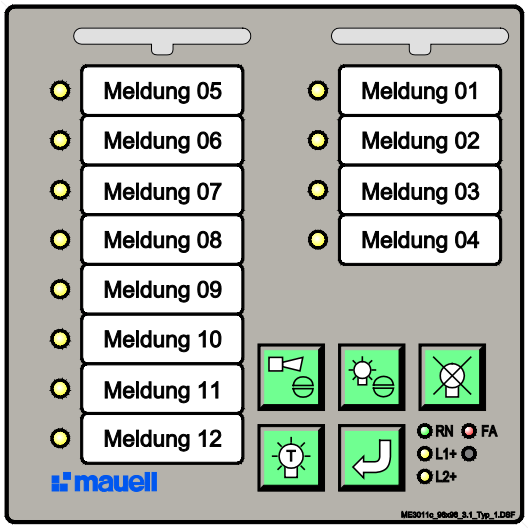
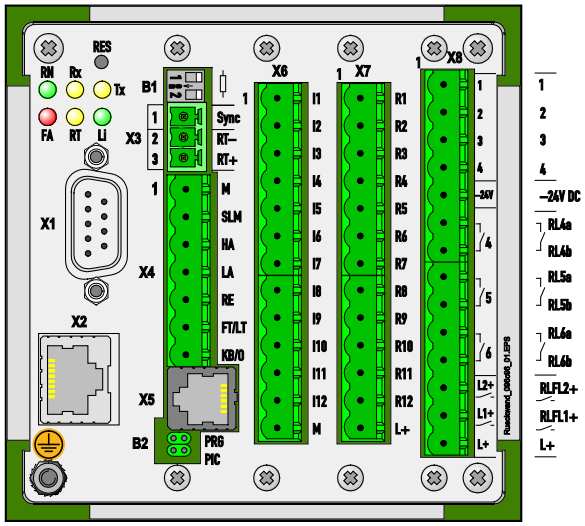
Control and Monitoring Elements



Digital Alarm Annunciator with 12 Alarms



Rear View

Push-Buttons

Horn acknowledge (HA)
stops the horn/buzzer.

Lamp acknowledge (LA)
makes flashing light permanently on or off, depending on the configured alarm sequence.

Lamp Reset (RE)
resets the alarm; depending on the configured alarm sequence

Lamp or Functional Test (LT/FT)
Lamp-Test turns all equipment LEDs on Functional-Test simulates an alarm condition in all points, depending on the configured alarm sequence

Push-Button with no function

Sound Signal

Horn acknowledge (HA)
stops the horn/buzzer.

LED Indication / Push-button

LED	***RN***	green	system is operative Flashing indicates that the system is operating in sleep mode (SLM)
LED	***L1***	yellow	AC / DC Fault
LED	***L2***	yellow	AC / DC Fault
LED	***FA***	red	Faulty Annunciator Flashes different from the alarm sequence. Detected faults are: Watch dog and Communication between Master and Slave CPU's
LED	***Mld1 - n***	yellow	Message is on

Back side (optional for -101/-104)

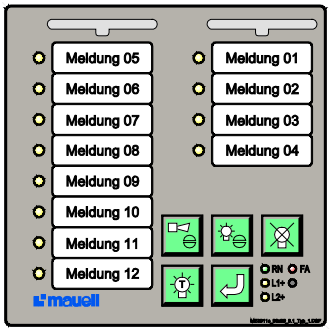
LED	***RN***	green	normal operation
LED	***FA***	red	Fault Alarm
LED	***RT***	yellow	normal operation
LED	***Rx***	yellow	Receive Data
LED	***Tx***	yellow	Transmit Data
LED	***Li***	green	Link established

Push-button - Back side (optional)

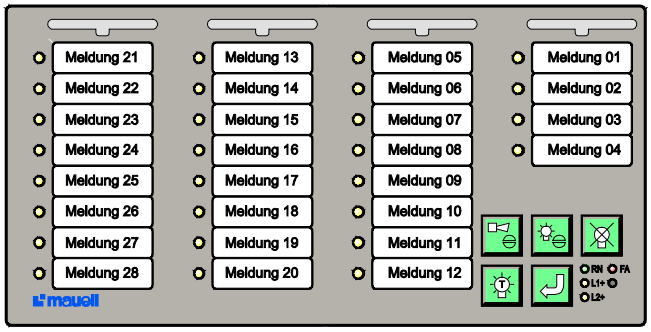
S	***RES***	Reset-Push-button -101/-104

Possible variants

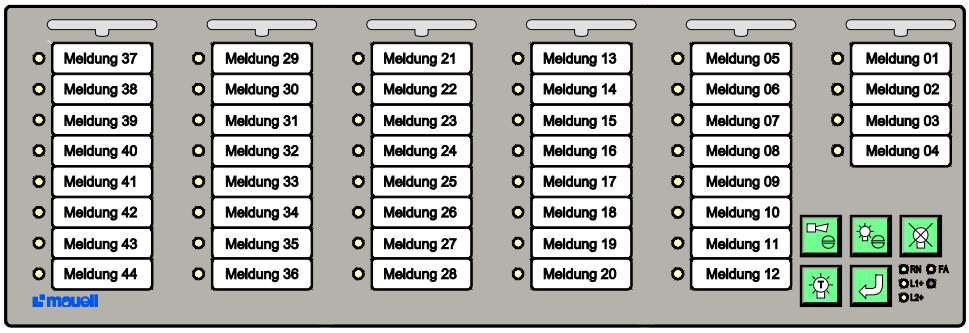
The minimum configuration possible for the annunciator is a module with 12 alarms. However, there are also modules with 28, 44 and 60 alarms available.



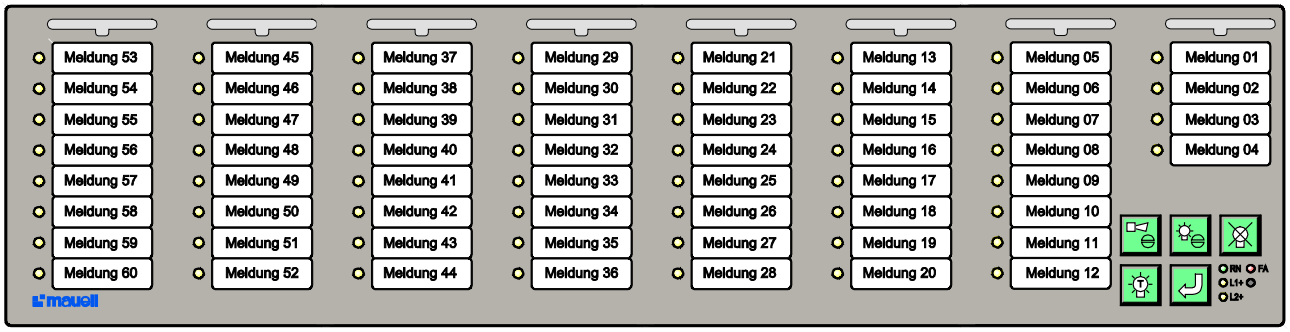
Module with 12 alarms



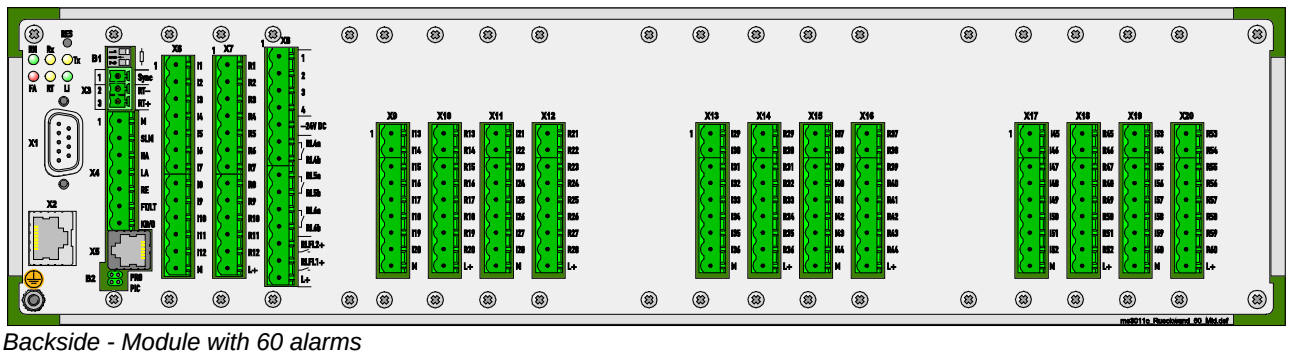
with 28 alarms



Module with 44 alarms



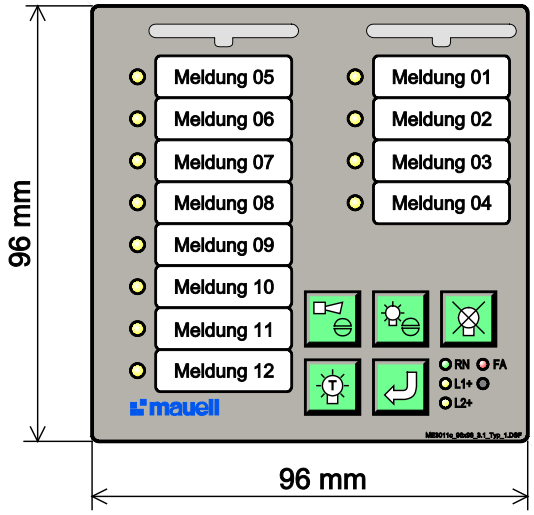
Module with 60 alarms



Backside - Module with 60 alarms

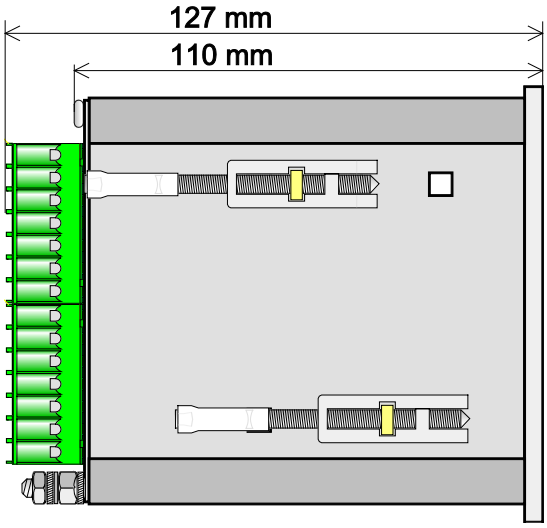
Dimension Drawing

Front View



Front view from a Digital Alarm Annunciator with 12 alarms

Side View



Side view from a Digital Alarm Annunciator

The *e.Tool ME3011 config* Software

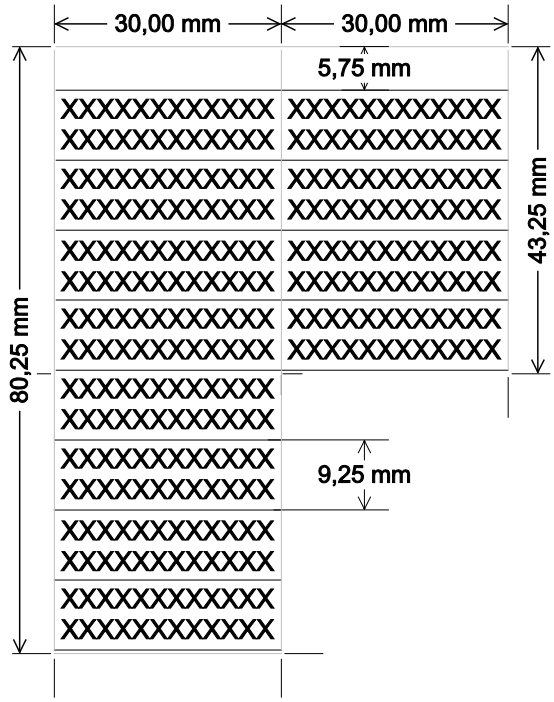
The ***e.Tool ME3011 config*** is for the Digital Alarm Annunciator-configuration via a serial interface.

The ***Digital Alarm Annunciator*** provides the configuration via a RS 232 cable (CS-02) by using the ***e.Tool ME3011 config*** program.
It is a one on one connection (1:1) between one Windows®-PC and a *Digital Alarm Annunciator*.

The latest *e.Tool ME3011 config* software can be downloaded from our website http://www.mauell.bilfinger.com

Labeling of the Messages

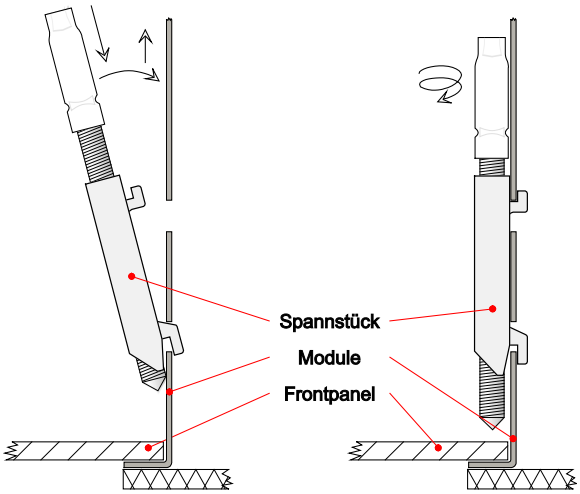
The messages are using paper labels.



The paper, at a weight of 100 g / m², should not be thicker than 1/10 mm.
You will find a corresponding PDF form under 3011 on our website http://www.mauell.bilfinger.com.

Panel Mounting

The Digital Alarm Annunciator is mounted with



spannstücke in the cut-out of the front-panel.

Cut-out size for panel mounting (WxH):

12 Alarms	91 x 91 mm
28 Alarms	187 x 91 mm
44 Alarms	283 x 91 mm
60 Alarms	379 x 91 mm

The installation depth is 117 mm.

Spacing of the modules

During the assembly of the modules, you have to ensure that the minimum upwards and downwards spacing is more than 50 mm.

Spare Parts

81-06-006	Spannstück (panel clamp)
71.90.011	X5 RS 232-RJ10 Progr. 5 m
71.90.012	X5 RS 232-RJ10 Progr. 10 m
71.90.013	X5 RS 232-RJ10 Progr. 15 m
71.90.___	USB to RS 232 Adapter
71.90.___	USB to RS 485 Adapter e.g. VScom USB-2COM-I Adapter
01-35-405B	X1 RS 232 – Nullmodem
01-35-632	X2 Ethernet cable (CAT6 S/FTP)

POWER SYSTEMS

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