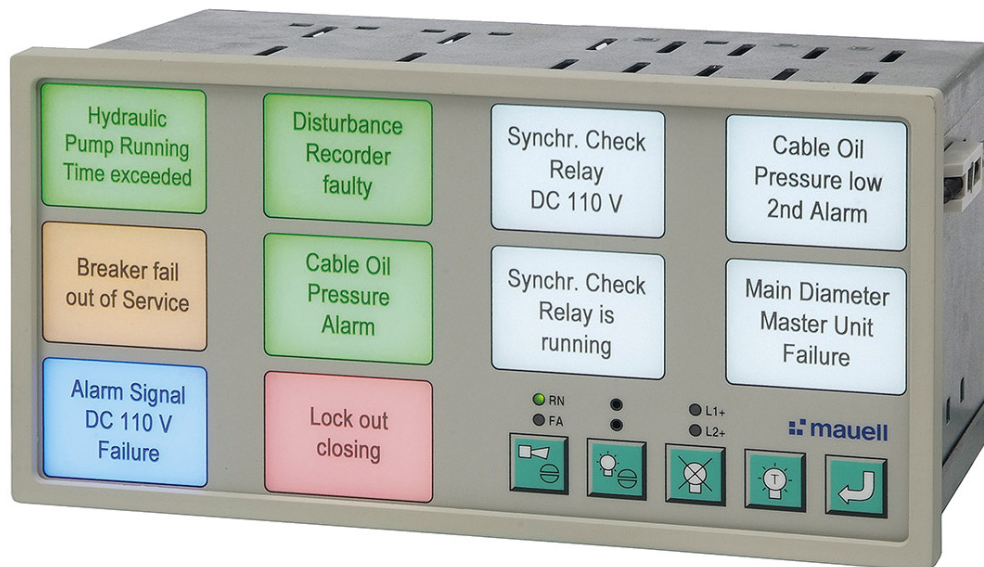




Tables of Contents	Page	Features
Application	1	- High degree of modularity,
Features	1	4 up to 58 alarms can be configured
Important Safety Information!	2	- 3 different housing options
Note to this Guide	2	- Basis and expansion modules available
Further Information	2	- Front panel with keypad,
Device Variants	2	LED-Backlight and sound
General Functions	3	- easy to replace alarm-text on
Annunciator Sequences - ISA 18.1	3	printable transparency stripes
Plan of Terminal Connections	4	- Configuration via PC software
Collective annunciation ME 3011DR	8	- RS 485 Modbus RTU interface for
Flashing synchronization of modules	8	communication with up to 15 modules
ISA 18.1 in Detail	9	- RS 232 Interface X5 for configuration
Technical Data	10	- Flashing synchronization input/output
International Standards	10	- GPS synchronization input
Connection Technology	10	- DC and AC power supply possible
Control and Monitoring Elements	11	- Wide range power supplies from
Possible variants	12	24 V DC up to 230 V AC
Dimension Drawing	13	- Monitoring of power supply (RLFL)
The e.Tool ME3011 config Software	13	for AC/DC and display via light and sound
Labeling of the Messages	14	- 3 programmable relay outputs for
Colors of the Backlight	14	collective annunciation (group alarm)
Panel Mounting	14	- Plugs with spring-cage connector
Spacing of the modules	14	- isolated power supplies and signals
Spare Parts	14	
Connecting the Expansions Modules	15	
Application		The following options are possible:
The ME 3011D <i>Digital Alarm Annunciator</i>		- RS 232 Interface X1 for different protocols
module is for registering signals, alarms,		such as IEC 60870-5-101
states and events from electrical systems.		- Ethernet X2 interface for different protocols
The gathered information can be provided		such as IEC 60870-5-104
locally via LED's and horn. These information's		- Event register for up to 1000 events
can also be provided as a group alarm or		- 110 up to 230 V AC/DC redundancy is possible
distributed via a network.		- 9 relay outputs
		configurable for group alarms
		- Repeater relays for each alarm point
		- Switch-ON and OFF delay

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.



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

® 2014 Bilfinger Mauell GmbH ME 3011D, *Digital Alarm Annunciator*, and e.Tool ME 3011 are names of Bilfinger Mauell GmbH products. Other trade names and product names are labels or registered brands of their owner.

Note to this Guide

This guide describes the system ME 3011D 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).

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Device Variants

Each device variant has different options.

	Signal delay	Group alarm 7-15	Interface card
ME 3011D			X
ME 3011D+	X		X
ME 3011DR	X	X	

- ME 3011D** Current version, which will be replaced, by the variants ME 3011D+ and ME 3011DR.
- ME 3011D+** New variant. In addition to the possibilities of the ME 3011D, individual signal delays for the single messages are available.
- ME 3011DR** New variant. In addition to the possibilities of the ME 3011D+, 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 **D+** and **DR**, 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 Instrumentation, Systems, and Automation 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 9-16

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.

ME 3011D / Alarm Indication / Quick Reference Guide

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	1	M	Inputs for remote Pushbuttons common root is (+24 V DC) Sleep Mode Horn Acknowledge Lamp Acknowledge Lamp Reset Function Test / Lamp Test Keypad OFF (Key switch)
	2	SLM	
	3	HA	
	4	LA	
	5	RE	
	6	FT/LT	
	7	KB/O	
X5		RJ10	Serial interface RS 232 (cable CS-02) for Config-PC
X6	1-12	I1-I12	Alarm Inputs 1-12 common root (GND)
	13	M	
X7	1-12	R1-R12	Repeater Outputs 1-12 common root (+)
	13	L+	
X8	1	L1+	Power Supply Inputs +24 V up to +60 V DC First supply voltage Second supply voltage GND
	2	L2+	
	3	M	
	4	+24V DC	24 V Power supply output - auxiliary field supply 24 V root (GND)
	5	–24V DC	
X8 option single	1	L1+	Power supply Inputs single 110 V up to 230 V Supply voltage (AC/DC) L1 Ground for L1 not contacted
	2	L1–	
	3	NC	
	4	+24V DC	24 V Power supply output - auxiliary field supply 24 V root (GND)
	5	–24V DC	
X8 option redund.	1	L1+	Power supply Inputs redundant 110 V up to 230 V First supply voltage (AC/DC) L1 Ground for L1 Second supply voltage (DC) L2 Ground for L2
	2	L1–	
	3	L2+	
	4	L2–	
	5	–24V DC	–24V root (GND)
	6	RL4a	Programmable relay outputs (Annunciation collective, Horn) 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
X9	14	L+	common ground for RLFL
	1		Outputs – Flatcable jacks to the expansionmodules Alarm 17-22 11-16 Alarm 23-28 17-22 Alarm 29-34 Alarm 35-40 Alarm 41-46 Alarm 47-52 Alarm 53-58
	2		
	3		
	4		
	5		
	6		
	7		

optional

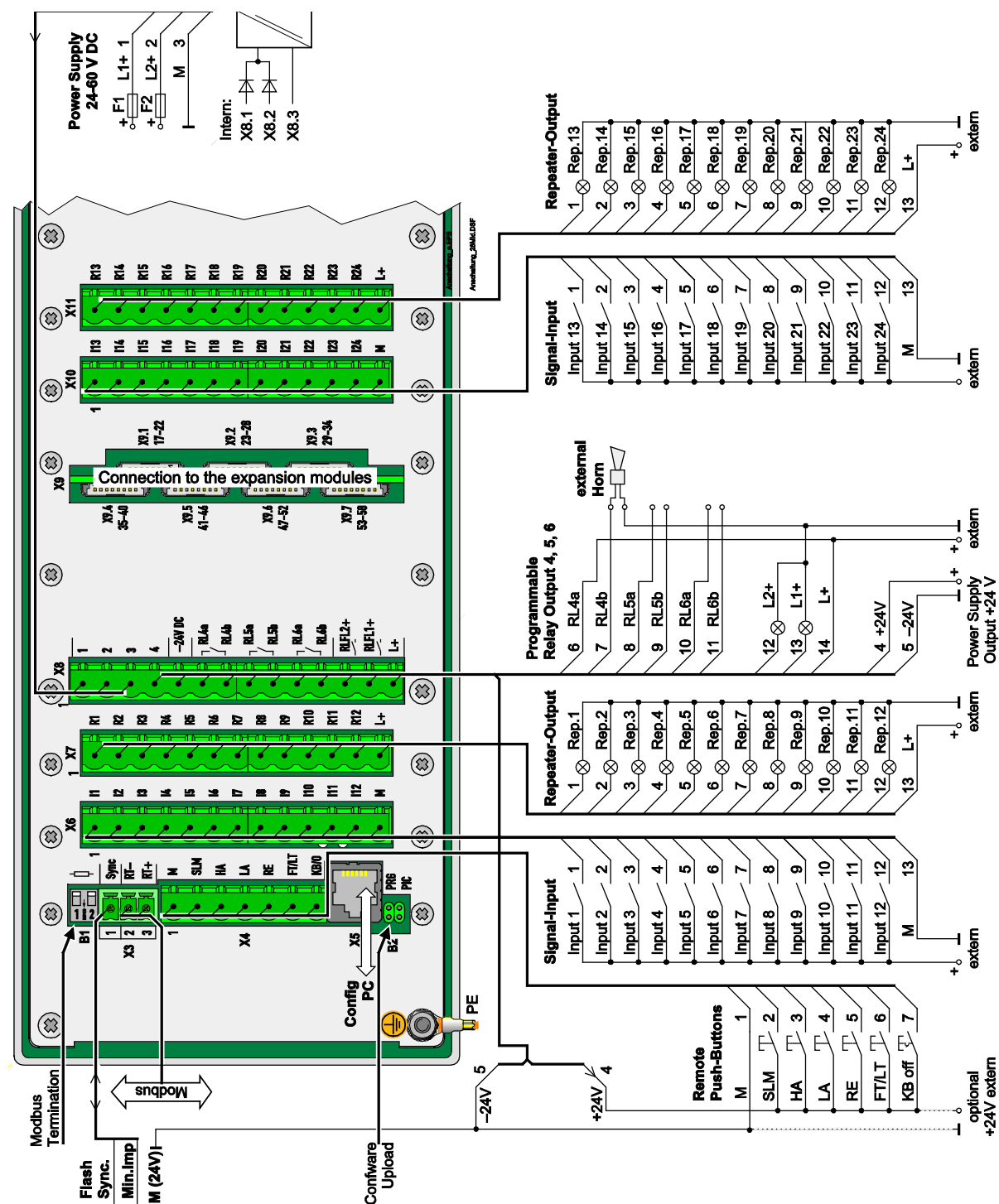
Plan of Terminal Connections Part 2

Clamp	Pin	Title	Meaning
X10	1-12 13	I13-I24 M	Alarm Inputs 13-24 common root (GND)
X11	1-12 13	R13-R24 L+	Repeater Outputs 13-24 common root (+)
X12	1-12 13	I25-I36 M	Alarm Inputs 25-36 common root (GND)
X13	1-12 13	R25-R36 L+	Repeater Outputs 25-36 common root (+)
X14	1-12 13	I37-I48 M	Alarm Inputs 37-48 common root (GND)
X15	1-12 13	R37-R48 L+	Repeater Outputs 37-48 common root (+)
X16	1-10 13	I49-I58 M	Alarm Inputs 49-58 common root (GND)
X17	1-10 13	R49-R58 L+	Repeater Outputs 49-58 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
	1 2	Terminator Terminator	Terminating resistor for Modbus Terminating resistor for Modbus
	1+2 1+2	PRG PIC	Firmware Upload
		PE	Protective Earth. Have to be connected with low-resistance!

 optional

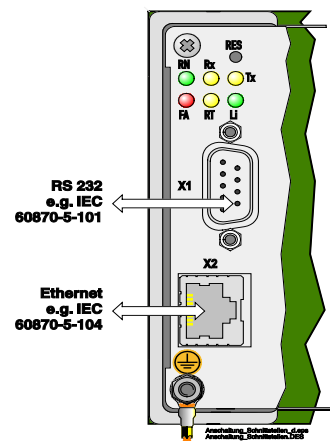
ME 3011D / Alarm Indication / Quick Reference Guide

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



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

Interface Module



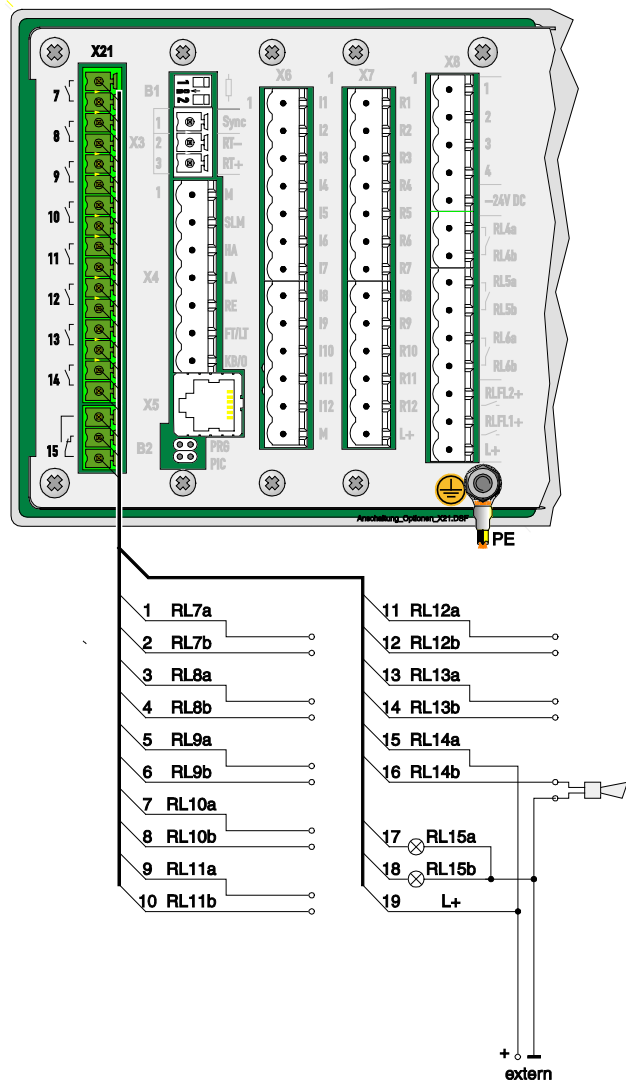
The configuration of the interface module is described in the user manual **Protocol Converter IEC 60870-5-104 (-101) / ME 3011** (1A050101.pdf).

7-16

ME 3011D / Alarm Indication / Quick Reference Guide

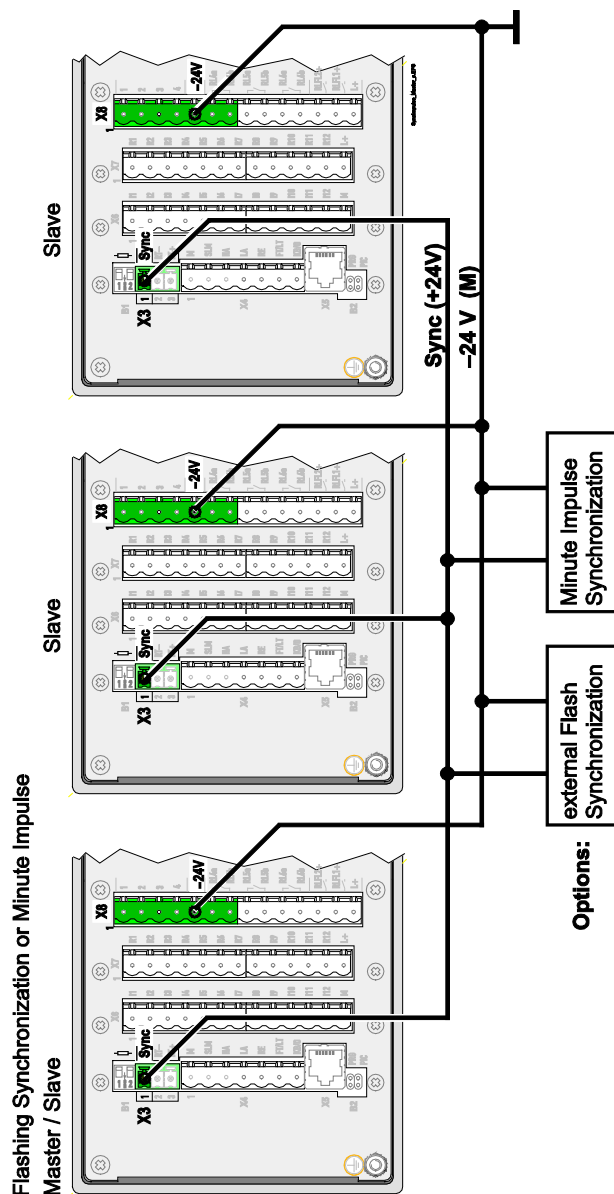
Collective annunciation ME 3011DR

The 9 additional group alarms (RL7 to RL15) are available on X21. When using the ME 3011DR, 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



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

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Technical Data

Power Supply standard

X8.1-3: 24-60 V DC $\pm 20\%$

optional

X8.1-2: 110-230V 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: 4 up to 58
DC $\pm 20\%$: 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
(Remote Terminal Unit)
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 $+80\text{ }^{\circ}\text{C}$
Operating temperature 0 to $+55\text{ }^{\circ}\text{C}$
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

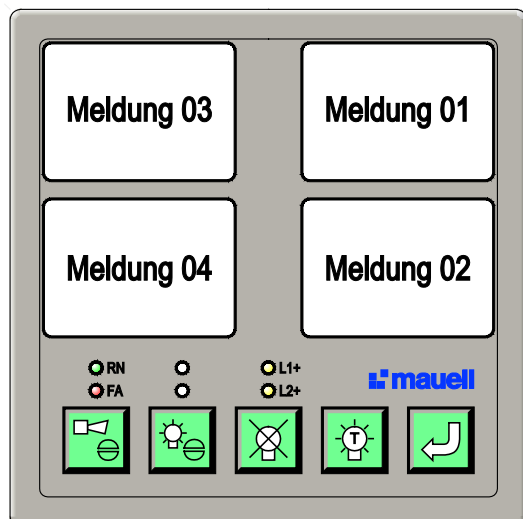
Phoenix®-plugs: COMBICON FKC 2,5
Maximum conductor cross section:
one-strand 0.20 to 2.5 mm²
fine-strand 0.20 to 2.5 mm²
fine-strand 0.25 to 2.5 mm² with
DIN 46 228 end splice
Phoenix®-plug: COMBICON MC 1,5 ST
(for X21, X3 Modbus & Sync.)

Event Register*

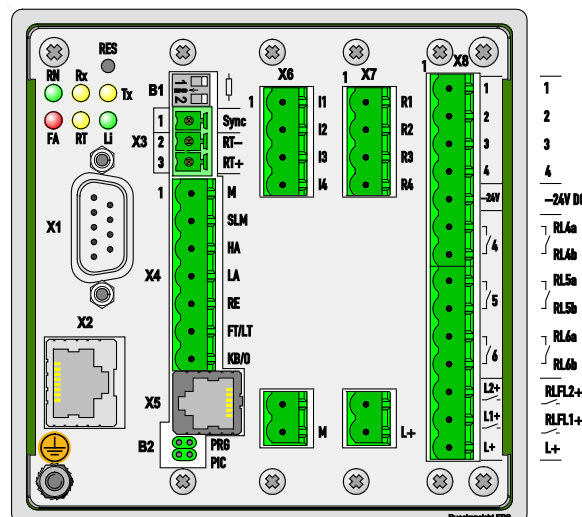
Count of events: 1000; including time stamp
Resolution: 1 ms with 2.5 ms samples

* is optional

Control and Monitoring Elements

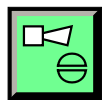


Digital Alarm Annunciator with 4 Alarms

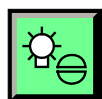


Rear View

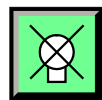
Push-Buttons



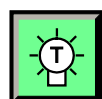
Horn acknowledge (HA)
stops the horn/buzzer.



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



Buzzer / Horn

LED Indication / Push-button

LED **RN** green system is operative
Flashing indicates that the system is operating in sleep mode (SLM)

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 **L1** yellow AC/DC Fault

LED **L2** yellow AC/DC Fault

LED **Meld.1 - n** user spec. Alarm 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

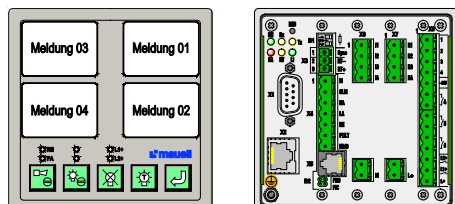
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Possible variants

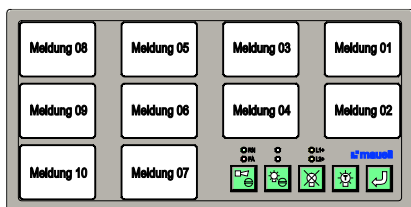
The smallest Basis module provides 4 Alarms.
But there are also Basis modules
with 10 and 16 alarms available.

Expandable Basis modules can be extended by
Expansion modules, providing up to 58 alarms.

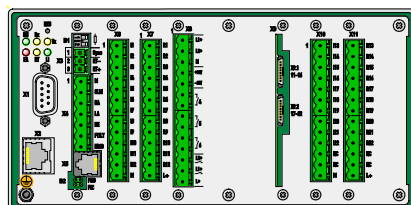
Basis modules



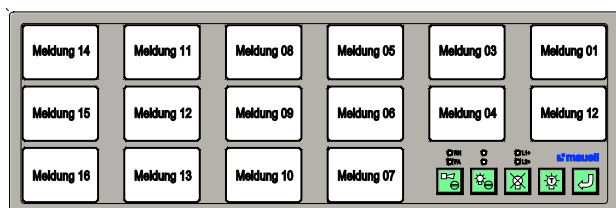
Basis module with 4 alarms
not expandable



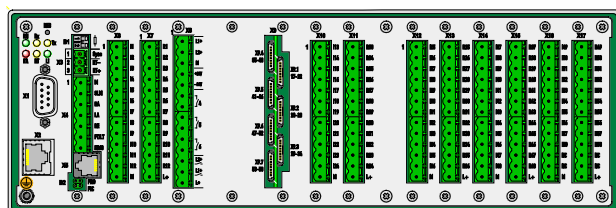
Basis module with 10 alarms
expandable with 12 alarms



Backside - Basis module with 10 alarms

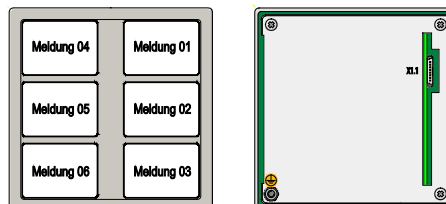


Basis module with 16 alarms
expandable with 42 alarms

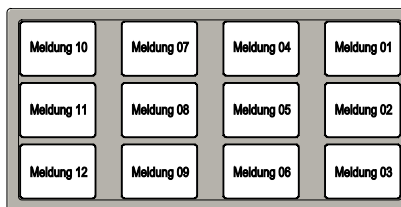


Backside - Basis module with 16 alarms

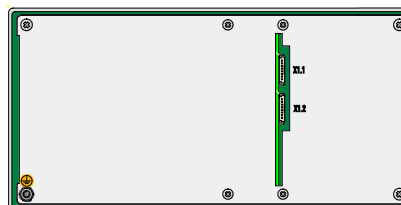
Expansion modules



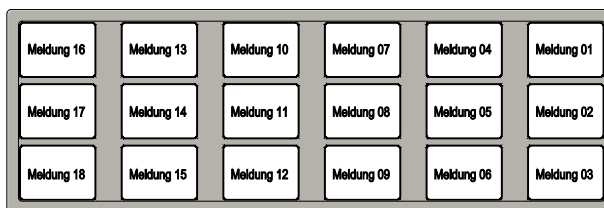
Expansion module with 6 alarms



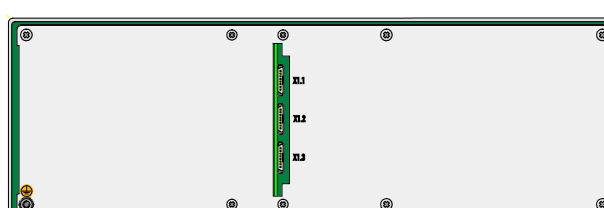
Expansion module with 12 alarms



Backside - Expansion module with 12 alarms



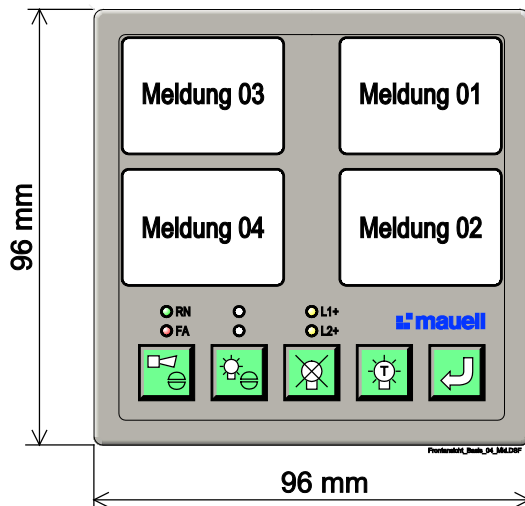
Expansion module with 18 alarms



Backside - Expansion module with 18 alarms

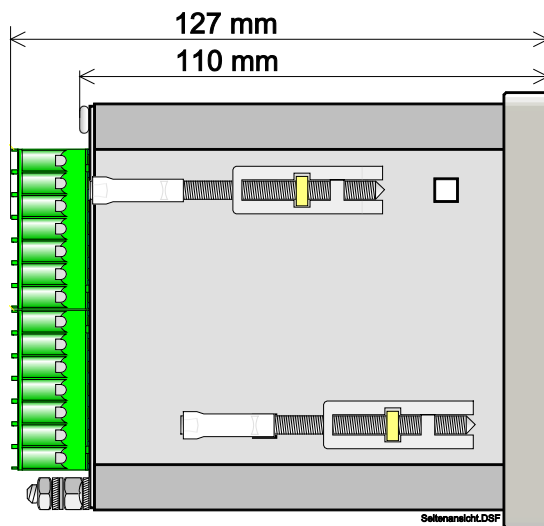
Dimension Drawing

Front View



Front view from a Digital Alarm Annunciator with 4 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.

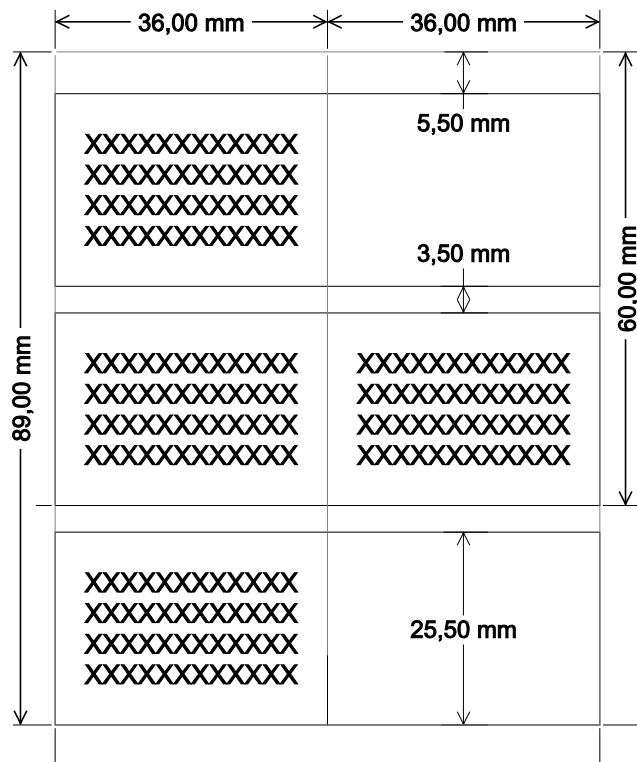
The **Digital Alarm Annunciator** provides the configuration via a RS 232 cable (CS-02) by using the **e.Tool ME3011 config** program. It is a one on one connection (1:1) between one Windows®-PC and a **Digital Alarm Annunciator**.

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

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Labeling of the Messages

The messages are labeled with transparencies.



The transparency should not be thicker than 1/10 mm. For example: AVERY Zweckform Inkjet Transparency 2502

You will find a corresponding PDF form under 3011 on our website <http://www.bilfinger.mauell.com>.

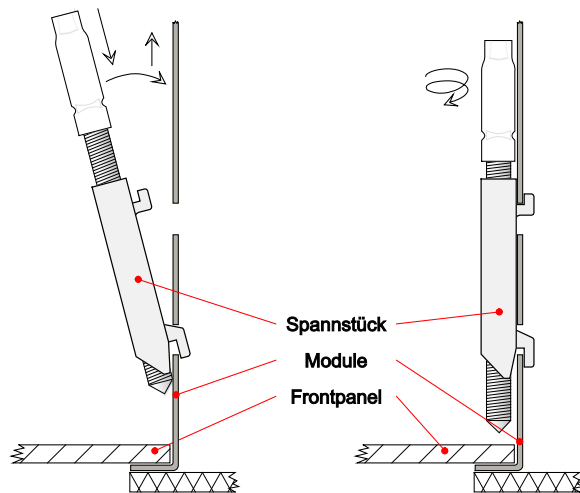
Colors of the Backlight

The color of the backlights has to be configured on order. You can choose from the colors white, red, orange or green.

At variable color configuration you can also select blue colored backlights.

Panel Mounting

The Digital Alarm Annunciator is mounted with spannstück in the cut-out of the front-panel.



Cut-out size for panel mounting (WxH):

4 / 6 Alarms	91 x 91 mm
10 / 12 Alarms	187 x 91 mm
16 / 18 Alarms	283 x 91 mm

The installation depth is more than 130 mm.

Spacing of the modules

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

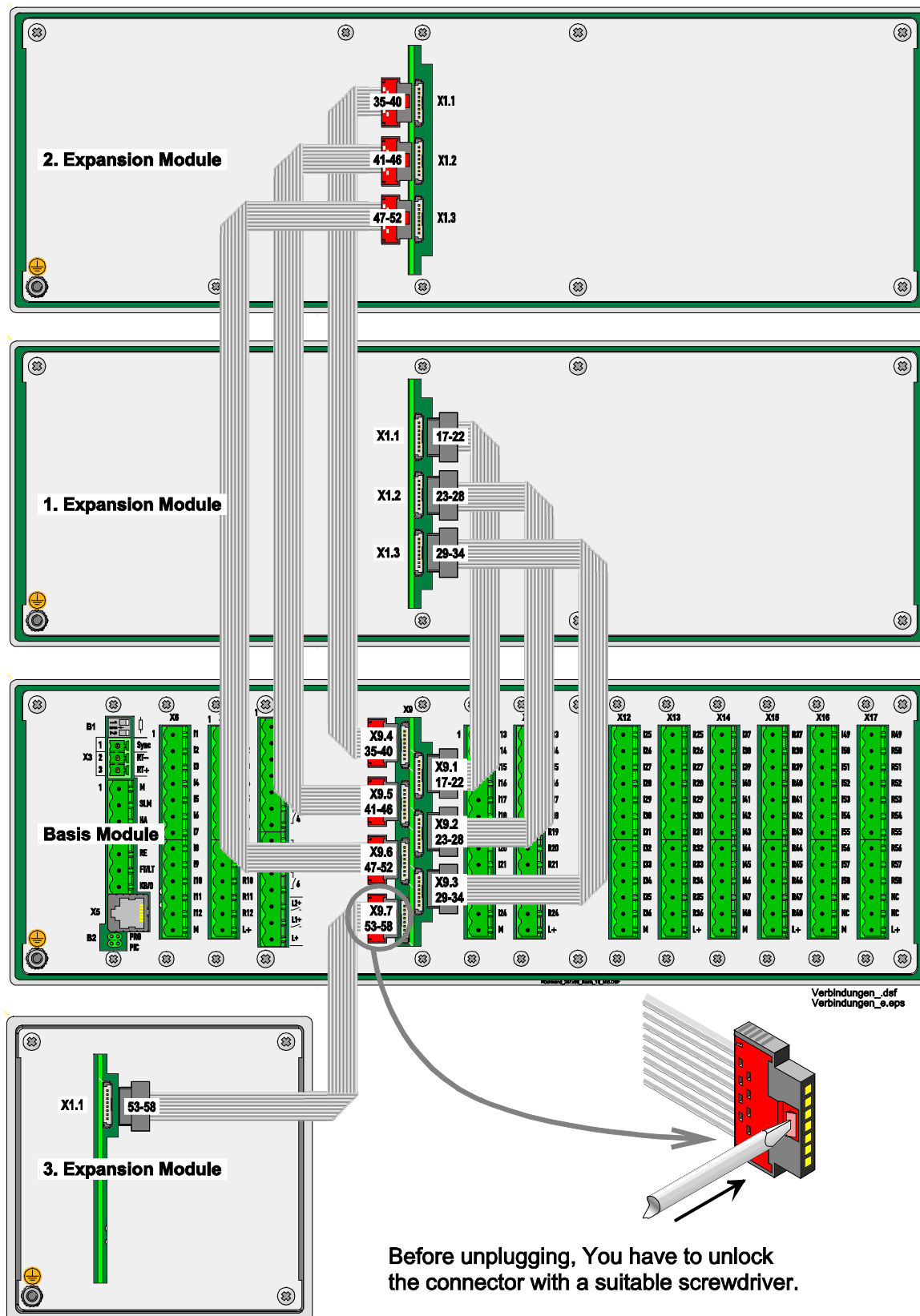
Spare Parts

81-06-006	Spannstück (panel clamp)
01-35-354	RJ11-RS 232 Prog. cable 5 m
01-69-780	Flat-cable (ribbon) 150 mm
01-69-781	Flat-cable (ribbon) 200 mm
01-69-782	Flat-cable (ribbon) 300 mm
01-69-783	Flat-cable (ribbon) 400 mm
06-73-053	USB to RS 232 Adapter
06-73-___	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)

Connecting the Expansions Modules

Depending on the selected basis module, it is possible to connect expansions modules. The links between the modules are made by flat-cables (ribbon cable). The example shows the maximal possible expansion:

Basis module with	16 Alarms
1. Expansion module with	18 Alarms
2. Expansion module with	18 Alarms
3. Expansion module with	+ 6 Alarms
	<u>58 Alarms</u>



POWER SYSTEMS

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