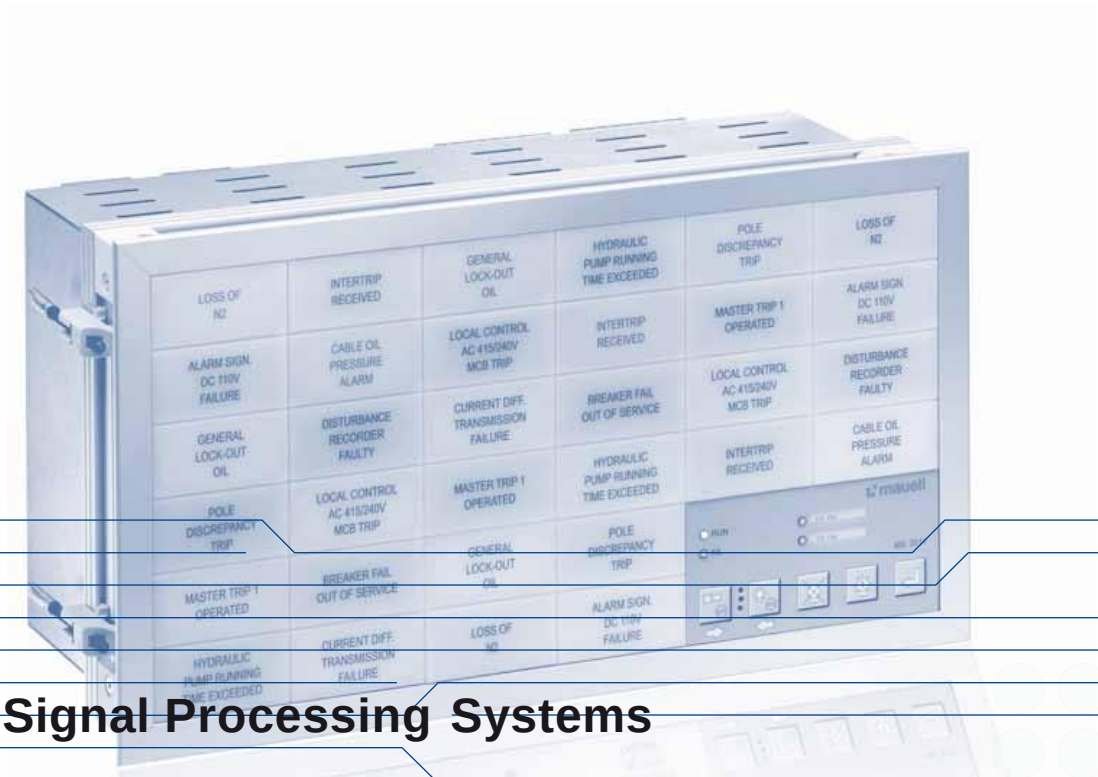


Scalable Signal Processing Systems

ME 3011B

Scalable Signal Processing Systems

Before connecting and powering this device, please read carefully the manual, and refer to it whenever you have any doubts.

Table of Contents

Functions

Main Characteristics

- Raised modularity degree, being able to be configured of 4 up to 252 points
- Optical alarm indication with Back Light or Ultra Bright Back Light LED in windows of 24 x 48 mm
- Configuration via software, easy configuration and operator-friendly visualization
- Communication interface RS 232C/485 for programming and communication in net
- Protocol of communication Modbus Slave RTU with register for 1,000 events and resolution of 1 ms
- Source of feeding full range incorporated, with feeding DC/AC
- Diverse options of tensions of feeding of field
- Option of LEDs in pull-out sockets that make possible the alteration of the color of the windows of alarm of the same annunciator in field

- Synchronism of blinks luminous for nets of annunciators
- Synchronism by minute pulse
- Supervision of lack DC and AC for sonorous, luminous and/or remote signalling
- 3 programmable relays that can be used for diverse applications

The signal processing system has the main function of safely signaling critical status of installations, aiming at their integrity.

They signal acoustically and optically equipment alarms in a standardized way, within the highest ergonomic and cognitive possible standard.

It is recommended, in general, to carry out the direct connection of electric field alarm signals to the annunciator, preventing loops through digital automation and control systems. Thus, the necessary operating safety level is achieved.

Visual message indication is provided on a colored backlight display panel (Backlight or Ultra-Bright Backlight display). Labels clearly allocate the display to the recorded event. An integrated and/or external signal indicator informs the operator acoustically. Messages can optionally be relayed by means of floating contacts. Efficient solutions for the acquisition, display and transmission of 4 to 252 messages can be easily implemented due to the system's modular design.

The maximum alarm signal cable length is 600 m (unshielded) or 1000 m (shielded). These maximum values may be strongly reduced in areas of very high electromagnetic fields, for example in the case of open air cable trays within substations. It is, also, of paramount importance to place the signal cables in trays carrying cables with homogeneous voltages. Placing high and low voltage cables in conjunction within the same cable tray may cause serious annunciator malfunctions or even hardware damages.

The signal processing systems ME 3011B, the new member of Mauell annunciator family, keeps one of the most important characteristics of ME 3010 series, which is the modularity of the alarm windows. The processing fundament of the alarm signs is now carried out through micro controllers.

So, ME 3011B incorporates all the advantages of a micro processed system, such as configuration of the annunciators main functions via configuration software for download.

This way, the signal processing systems ME 3011B provides all conventional functions of alarm announcing together with new and advanced communication function in local network and event recording, among others.

These functions will be described in details throughout the manual.

Modularity and Arrangements

The minimum configuration possible for the annunciator is a central module with 4 alarm points, and dimension of 2v x 4h or 4v x 2h (see portion on lower right corner of diagram below).

Expansion modules can be added to this central unit, with 4 or 8 alarm points each, always in 2v x2h or 2v x 4h and 4v x 2h modularity basis.

So the subsequent configurations are 8, 12, 16, 20, 24, 28 points and so on, up to a maximum of 252 alarm points.

The module arrangement follows the diagram below.

Arrangements

Modular arrangements of the system

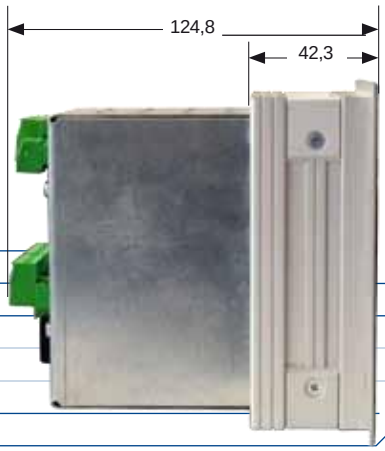
No. of points	Arrangement
4	2v x 4h 4v x 2h
8	2v x 6h 6v x 2h
12	8v x 2h 4v x 4h 2v x 8h
16	10v x 2h 2v x 10h
20	12v x 2h 6v x 4h 4 x 6h 2v x 12h
24	14v x 2h 2v x 14h
28	16v x 2h 8v x 4h 4v x 8h 2v x 16h

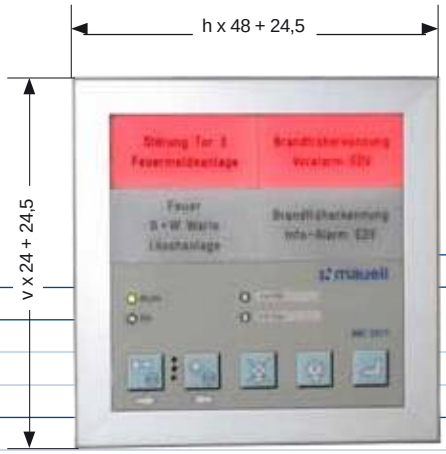
No. of points	Arrangement
32	18v x 2h 6v x 6h
36	20v x 2h 10v x 4h 4v x 10h
40	22v x 2h
44	24v x 2h 12v x 4h 8v x 6h 6v x 8h 4v x 12h
52	14v x 4h 4v x 14h
56	10v x 6h 6v x 10h
60	16v x 4h 8v x 8h 4v x 16h

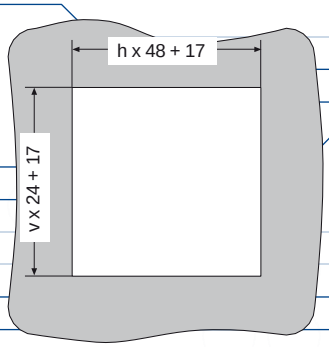
No. of points	Arrangement
68	18v x 4h 6v x 12h
76	20v x 4h 10v x 8h
84	22v x 4h
92	24v x 4h 12v x 8h 8v x 12h 6v x 16h
108	14v x 8h
116	10v x 12h
124	16v x 8h 8v x 16h
140	18v x 8h 12v x 12h
156	20v x 8h 10v x 16h

No. of points	Arrangement
164	14v x 12h
172	22v x 8h
188	24v x 8h 16v x 12h 12v x 16h
212	18v x 12h
220	14v x 16h
236	20v x 12h
252	16v x 16h

Dimensions







Calculation of the cutout dimensions

System with v = 4 lines and
h = 2 columns

Cutout height:

v x 24 + 17 = 4 x 24 + 17 = 113

Cutout width:

h x 48 + 17 = 2 x 48 + 17 = 113

Cutout Table (height x width) mm xmm

	No. of column n(h)								
No. of lines n (v)	No. of points	2	4	6	8	10	12	14	16
	2	-	65 x 209	65 x 305	65 x 401	-	65 x 593	-	65 x 785
	4	113 x 113	113 x 209	113 x 305	113 x 401	113 x 497	113 x 593	113 x 689	113 x 785
	6	161 x 113	161 x 209	161 x 305	161 x 401	161 x 497	161 x 593	-	161 x 785
	8	209 x 113	209 x 209	209 x 305	209 x 401	-	209 x 593	-	209 x 785
	10	257 x 113	257 x 209	257 x 305	257 x 401	-	257 x 593	-	257 x 785
	12	305 x 113	305 x 209	-	305 x 401	-	305 x 593	-	305 x 785
	14	353 x 113	353 x 209	-	353 x 401	-	353 x 593	-	353 x 785
	16	401 x 113	401 x 209	-	401 x 401	-	401 x 593	-	401 x 785
	18	449 x 113	449 x 209	-	449 x 401	-	449 x 593	-	-
	20	497 x 113	497 x 209	-	497 x 401	-	497 x 593	-	-
	22	545 x 113	545 x 209	-	545 x 401	-	545 x 593	-	-
	24	593 x 113	593 x 209	-	593 x 401	-	-	-	-

Labeling and Terminal Assignment

Engraving or printing in the factory

In the front tiles the text will be engraved, the engraving is black colored. This gives a rugged, durable marking.

Alternatively, a direct printing of the front tiles is possible.

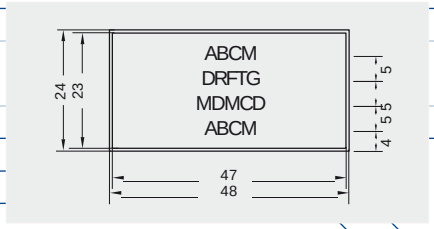
front tiles: 24 m x 48 mm (Height x Width), White, translucent

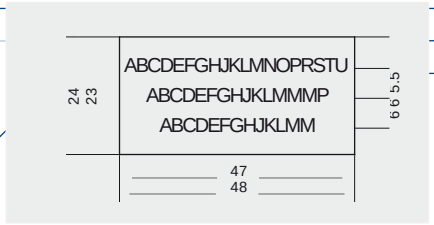
Character height = 3 mm Maximum number of characters per line = 19 Maximum number of lines = 4

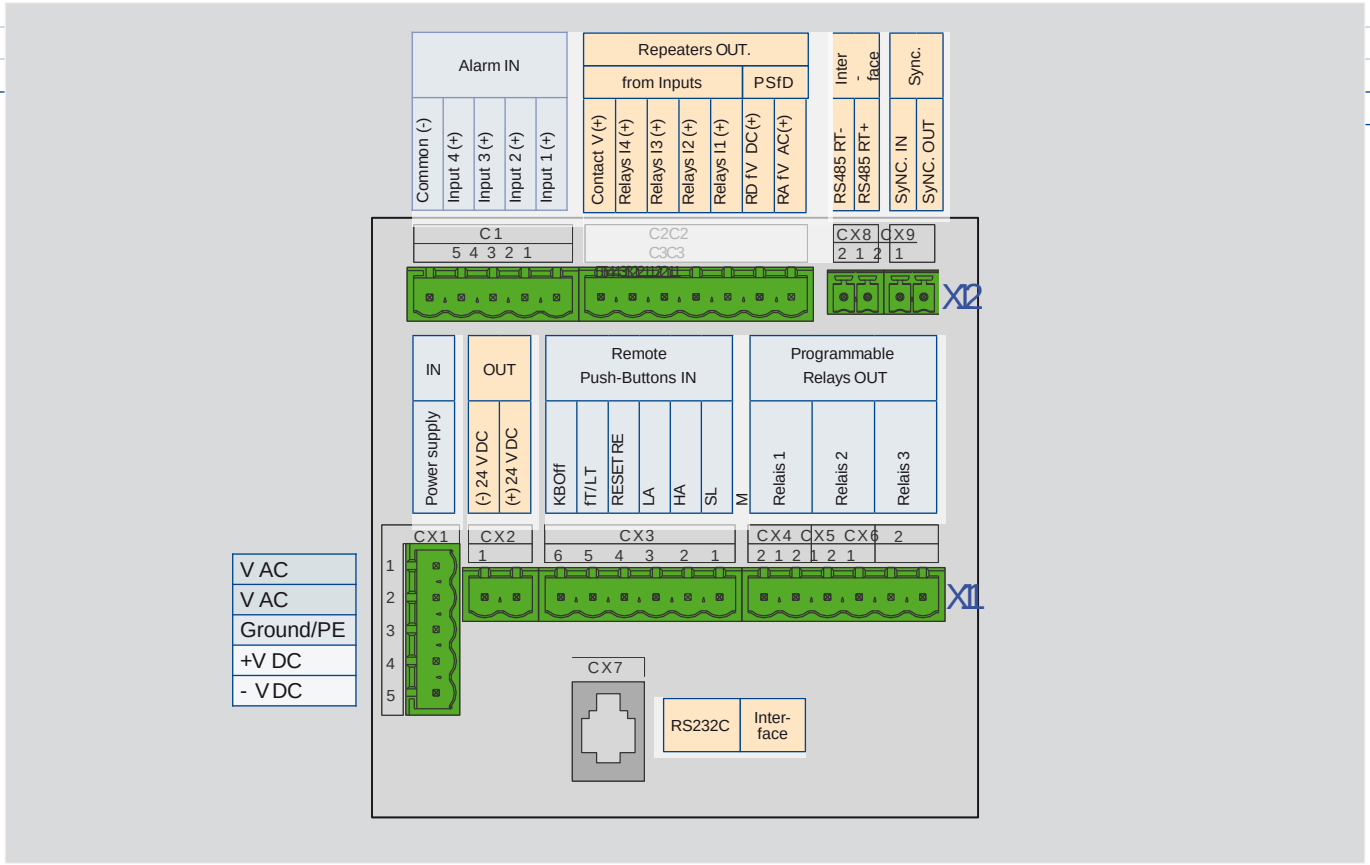
Printing on translucent film by the customer

for the lettering a ASK kit is available. With transparent, adhesive stickers, the front tiles can be printed with text.

In the set is a guide, practice pages and stickers for 150 alarm points.







Rear view

Signaling Sequences

The signal processing systems ME 3011B can be configured in order to comply with 16 signaling sequences. Among them the most important are the following:

ISA-RP 18.1*(ISA-S18.1)*

ISA-1*(A)*, ISA-1A*(A-5)*, ISA-1B*(A-4)*, ISA-2A*(R-8)*, ISA-2C*(M)*, ISA-4A*(F1A)*, ISA-4AR*(F1M)* etc.

Other sequences can be implemented on request.

Alarm sequences

REF ISA	ALARM	NORMAL	ALARM	Acknowledge Sound	Acknowledge Light	Back to NORMAL	Back to NORMAL before Acknowledge	Acknowledge Sound	Acknowledge Light	RESET
ISA 1	Light / Sound	●	☼	☼	☼	●	☼	☼	●	
ISA 1A	Light / Sound	●	◎	☼	◎	●	◎	◎	●	
ISA 1B	Light / Sound	●	☼	☼	◎	●	●			
ISA 2A	Light / Sound	●	F ☼	F ☼	◎	S ☼	F ☼	F ☼	S ☼	●
ISA 2C (M) default	Light / Sound	●	☼	☼	◎	◎	☼	☼	◎	●

PRIMARY SIGNAL SEQUENCES (1st Event)

REF ISA	ALARM	NORMAL	ALARM Initial	ALARM Subseq.	Acknowledge Initial	Acknowledge Subseq.	Back to NORMAL Initial	Back to NORMAL Subseq	Back to NORMAL before Acknowledge Initial	Back to NORMAL before Acknowledge Subseq.	Acknowledge Initial	Acknowledge Subseq	RESET
ISA 4A	Light / Sound	●	☼	◎	◎	◎	●	●	☼	●	●	●	
ISA 4R	Light / Sound	●	☼	◎	◎	◎	◎	◎	☼	◎	◎	◎	●

LEGEND

F = Fast
S = Slow
● LED Off
◎ LED On
☼ LED intermittent
Siren = Off
Siren = On

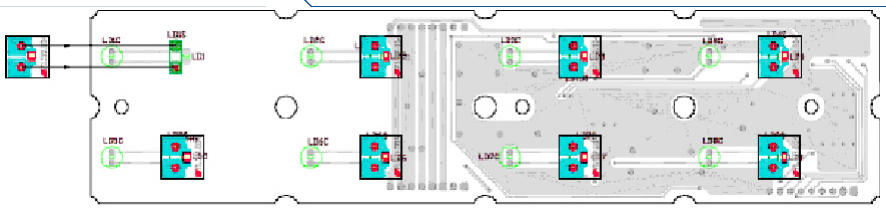
Special Options

Light Display with more than one color
in this case, the quantity and position for each color must be requested by the customer.

for Back Light Display or Ultra Bright Back Light LED – up to 5 colors in white (standard), red, yellow, green, or blue

Back Light Socket
In this option, the SMD Back Light LED or Ultra Bright Back Light LED is socket mounted and plugged on the annunciators PCB.
It allows to change the indicating light color for the individual alarm points.

The socket BackLight LED or ultra Bright Back Light LED must be specified at ordering the annunciator, as a special factory option

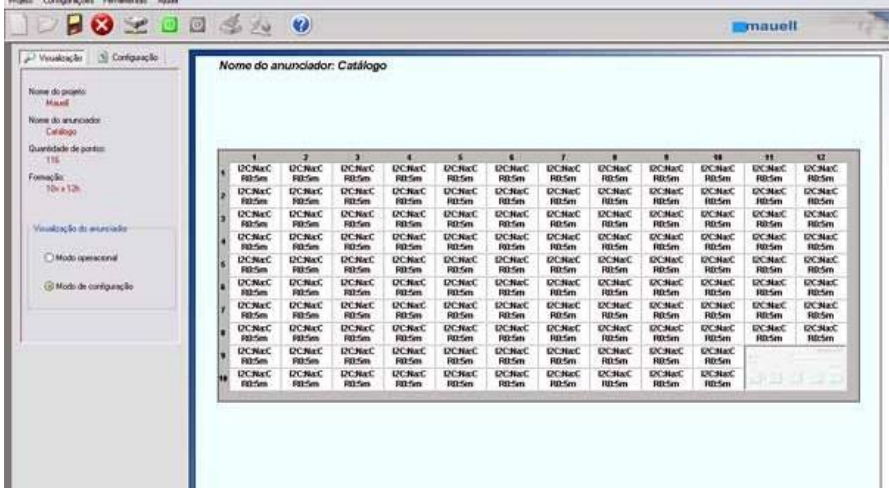


Systems and modules
The left example: System with 24 lines vertical and 4 columns horizontal (according to 12 modules high and one module wide)

The example right: System with 24 lines vertical and 8 columns horizontal (according to 12 modules high and two modules wide)

Modules	1			
Column	4	3	2	1
Line	24v x 4h			
12 24	8			
	92			EM-02
11 22	8			
	84			EM-02
10 20	8			
	76			EM-02
9 18	8			
	68			SM-02
8 16	8			
	60			EM-02
7 14	8			
	52			EM-02
6 12	8			
	44			EM-02
5 10	8			
	36			EM-02
4 8	8			
	28			EM-02
3 6	8			
	20			EM-02
2 4	8			
	12			EM-02
1 2	8			
	4			CM-03

Modules	2			1				
Column	8	7	6	5	4	3	2	1
Line	24v x 8h							
12 24	8				8			
	180			EM-02	188			EM-02
11 22	8				8			
	172			EM-02	164			EM-02
10 20	8				8			
	148			EM-02	156			EM-02
9 18	8				8			
	140			EM-02	132			SM-02
8 16	8				8			
	116			EM-02	124			EM-02
7 14	8				8			
	108			EM-02	100			EM-02
6 12	8				8			
	84			EM-02	92			EM-02
5 10	8				8			
	76			EM-02	68			SM-02
4 8	8				8			
	52			EM-02	60			EM-02
3 6	8				8			
	44			EM-02	36			EM-02
2 4	8				8			
	20			EM-02	28			EM-02
1 2	8				8			
	12			EM-02	4			CM-03



Expansion Modules

EM-02 - Expansion Module with 8 Alarm Points, Arrangement 2v x 4h.

Each expansion modules provides 8 alarm points, used together with central module and in systems with more than 60 alarm points, also slave modules. The relay option provides an additional potential-free relay contact for each alarm point.

Front View

1	2	3	4
5	6	7	8

EM-03 - Expansion Module with 8 Alarm Points, Arrangement 4v x 2h.

Each expansion modules provides 8 alarm points, used together with central module and in systems with more than 60 alarm points, also slave modules. The relay option provides an additional potential-free relay contact for each alarm point.

Front View

1	2
3	4
5	6
7	8

EM-04 - Expansion Module with 4 Alarm Points, Arrangement 2v x 2h.

Each expansion modules provides 4 alarm points, used together with central module and in systems with more than 60 alarm points, also slave modules. The relay option provides an additional potential-free relay contact for each alarm point.

Front View

1	2
3	4

Technical Data

Scalable Signal Processing Systems ME 3011B

1 Supply Voltage

1. PS-05 Power Supply	Standard 24 Vdc ± 20 %
1.2 PS-02 Power Supply (Option)	Input 19 to 264 Vdc and/or 90 to 264 Vac Output 24 Vdc/0.75 A
1.3 Special Option PSfD	Power Supply fault Detector for Vdc and/or Vac

Note: All power supplies are integrated into the annunciator

2 inputs

1. Alarm Inputs	4 up to 252
Potential separation	optocoupler
Input Voltages	24, 48 , 60, 110/125 Vdc and 110/127, 230 Vac, ± 20 %
Input Current	3 mA (typical)
Input filter	lower value = 5 ms, programmable in steps of 2.5 ms
2.2 External Push-Button Station	24 Vdc
Potential separation	optocoupler
functions	Sound Acknowledge (HA) Light Acknowledge (LA) Delete/Reset (RE) Light Test / function Test Sleep Mode (SLM) Keyboard Off (KBOff)
2.3 flash synchronism input/output	24 Vdc
Potential separation	optocoupler
2.3 Minute pulse input	24 Vdc
Potential separation	optocoupler

3 Outputs

1. Relays	3 freely programmable relays for various functions, e.g., external buzzer, voltage fault, alarm group, etc
3.2 Sound Indication	90 db / 10 cm, 4 kHz
3.3 Repeatrelays (option)	1 contact for each alarm point, as option

Note: Field voltages over 125 Vdc or Vac do not support repeater relays

3.4 Repeat relays for Power Supply fault Detector (PSfD)	1 contactfor each Power Supply fault detector (PSfD Option)

Note: Contact capacity for all relays is 5 A / 24 Vdc for resistive load. Maximal switching voltage: 125 Vdc / 250 Vac

4 interfaces

4.2 Communication for configuration RS232C (option)	RS232C bi-directional Baud rate: 9600, n, 8, 1
4.3 Communication for Modbus (option)	RS 485 bi-directional serial communication (configurable)
Baud rate	110 to 19,200
Parity	even, odd or none
Stop bit	1 or 2
Protocol	Modbus RTU (Slave)

5 Event Register (Option)

1.	Events	1000, with timestamp
2.	Resolution	1 ms, samples 2.5 ms
3.	Interfaces	RS 485
4.	Protocols	Modbus RTU (slave)

6 Visualization

1. Light Indication

Back light	available in white (standard), red, yellow, green and blue color
Ultra Bright Back light	available in white (standard), red, yellow, green and blue color

On sockets option allows to change the color at the field:

Back Light Socket (Option)	available in red, yellow, green, white and blue color
Ultra Bright Back Light Socket (Option)	available in red, yellow, green, white and blue color

6.2 flashing frequency	fast: approx. 1.2 Hz Slow: approx. 0.4 Hz
6.3 Windows	
Dimension	24 mm x 48 mm
Back light	White translucent modules

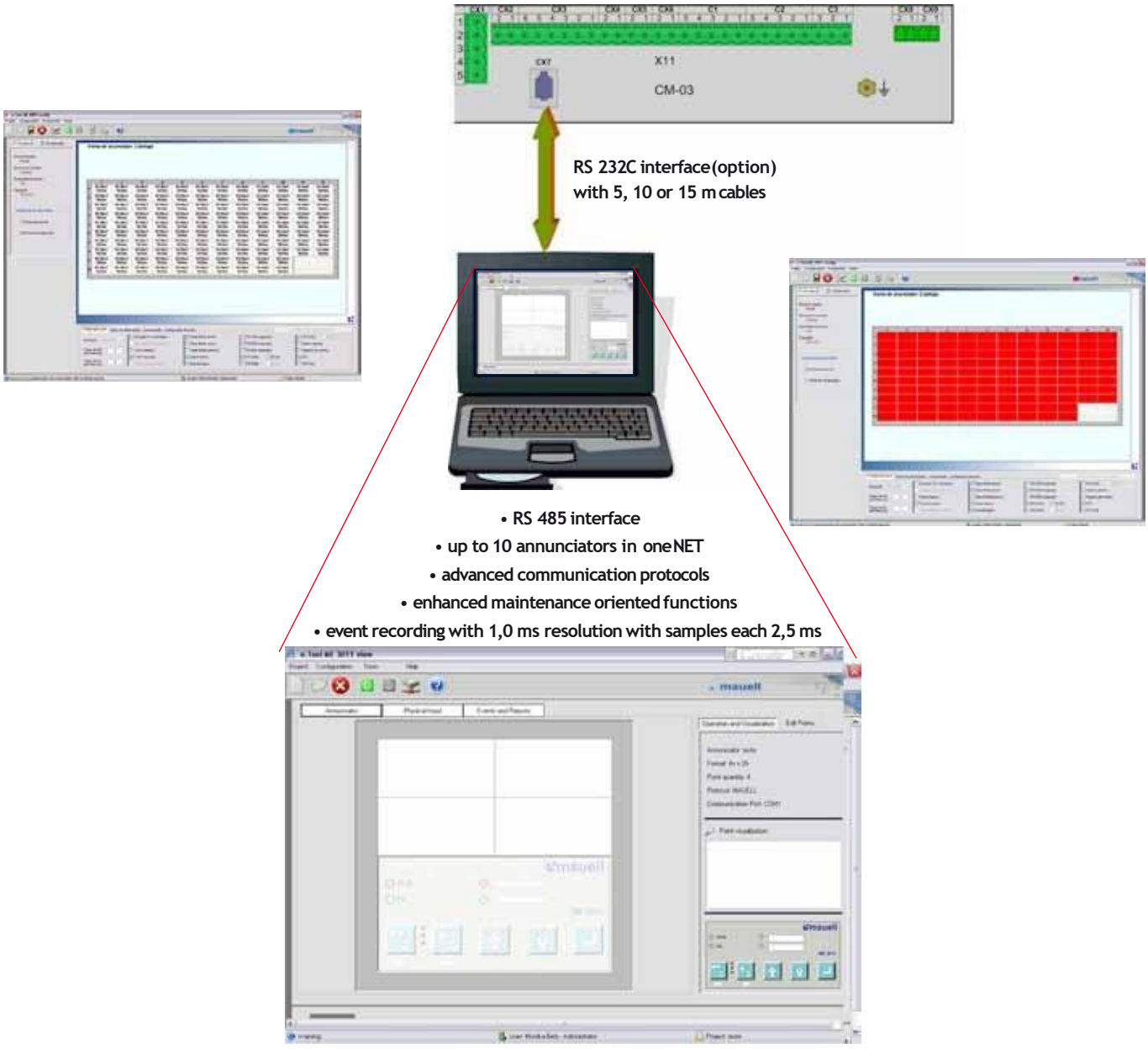
7 general

1.	Alarm sequence	ISA 1, 1A, 1B, 2A, 2C, 4A; 4AR others on request
7.2	Environment Operation temperature	0 to + 55°C
	Storage temperature	- 20 to + 80°C
	Relative Humidity	0 to 95 %, without condensation
7.3	Protection class front	IP41
	Enclosure	IP30
7.4	Isolation	2 kV, 50 Hz, IEC 60255-5
5.	Emission	DIN EN 55011
6.	ESD	DIN EN 61000-4-2
7.	Electromagnetic field Immunity	DIN EN 61000-4-3
8.	Rf frequency Immunity	DIN EN 61000-4-6
9.	Burst	DIN EN 61000-4-4
7.10	Surge	DIN EN 61000-4-5
7.11	Terminals	Terminal connectors (removable) for cables up to 1.5 mm^2 Phönix Combicon 5,08 grid
7.12	Tropicalized type	special option, on request

Software e.Tools für ME 3011B

This signal processing system can total be represent for software. Software e.Tool ME 3011 config presents ample functionality that facilitates its use, bringing to the user all the configuration possibilities of the product.

The signal processing system ME 3011 brings powerful tools of dedicated supervision and control for applications in nets of indication systems.
With intelligent user and not complicated an interface of, e.Tool ME 3011 view brings to the screen annunciating virtual with information in real time, beyond register events with resolution 1 ms.




LOSS OF N2
POLE DISCREPANCY TRIP
INTERTRIP RECEIVED
LOCAL CONTROL AC 415/240V MCB TRIP
ALARM SIGN. DC 110V FAILURE
MASTER TRIP 1 OPERATED
CABLE OIL PRESSURE ALARM
BREAKER FAIL OUT OF SERVICE
GENERAL LOCK-OUT OIL
HYDRAULIC PUMP RUNNING TIME EXCEEDED
DISTURBANCE RECORDER FAULTY
CURRENT DIFF. TRANSMISSION FAILURE
mauell
RUN
FA
FA Vdc
FA Vac
ME 3011

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