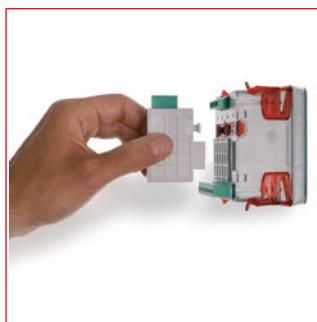


Measuring Instruments and Mains Analysers

Mains Analyser NA96



MGF39000



NA96 and Module



NA96 and Module



MGF3900A



MGF3900R



MGF3900E



MGZEM001

Schrack-Info

- Multifunction measurements (4 quadrants)
- Active energy metering (2 quadrants)
- AC supply
- Single-phase, three-phase or 4-wire (adjustable)
- Voltage – phase - phase
- Minimum voltage per phase
- Maximum voltage per phase
- Harmonic content of each phase
- Current – phase and neutral, average per phase, maximum average per phase, total current, harmonic content of each phase
- Total output – active, reactive and apparent power, power per phase – active, reactive and apparent power, average, maximum average
- Power factor – overall, per phase
- Frequency
- Working hours
- Active energy – positive overall, positive for each phase
- Reactive energy – positive overall, positive for each phase
- Active energy – negative overall
- Reactive energy – negative overall

Mains Analyser NA96

Technical data - Part 1

HOUSING

Panel cut-out flush mounting	92 x 92 mm
Front frame	96 x 96 mm
Depth	62 mm, 81 mm (including optional module)
Connection	Connection Screw terminal, voltage – max. 4 mm ² , current – max. 6 mm ²
Housing material	Polycarbonate (self-extinguishing)
Degree of protection	IP 54 (front) – IP 20 (terminals)

DISPLAY

LCD backlit 68 x 65 mm	Backlighting switches off automatically after 20 seconds without operation
Measuring display	4 lines – 4 digits
Reading update	1.1 seconds
Energy count	8 digits (6+2 decimals)
Accuracy (+ 1 digit)	Active energy NA96: Class 1 (EN62053-21), NA96+: Class 0.5 (EN62053-21) Reactive energy Class 2 (EN62053-23) Voltage NA96: ± 0.5% (80 500 V phase-phase), NA96+: ± 0.2% (80 690 V phase-phase) Current NA96: ± 0.5% (10 120% In), NA96+: ± 0.2% (10 120% In) Power NA96: ± 1% (10 120% Pn, Qn, Sn), NA96+: ± 0.5% (10 120% Pn, Qn, Sn) Power factor NA96: ± 1% (0.5 ind 0.5 cap), NA96+: ± 0.5% (0.5 ind 0.5 cap)
Frequency	± 0.15 Hz
Programming	4 front keys, access protected by password Parameter retention in non-volatile memory

PROGRAMMABLE PARAMETERS

Mains type	1-phase or 3/4-phase connection
Current rating	1 – 5 A
Transformer ratio	NA96: 1...10 (voltage – max. primary voltage 1,200 V) NA96+: 1...3000 (voltage – max. primary voltage 300,000 V) 1...9999 (current – max. primary current 50 kA/5 A – 10 kA/1 A)
Communication (optional modules)	RS 485, Ethernet, Profibus
Pulse value (optional modules)	Active or reactive energy, significance, pulse duration
Relay (optional modules)	Allocation of measured variable, threshold, min. or max. – NO or NC, hysteresis, On delay, Off delay
Current and power average	Integration time 5/8/10/15/20/30/60 minutes
Display	Contrast: 4 levels
Backlight	0–30 – 70–100%
Display page	After switch-on (measured quantity)

Measuring Instruments and Mains Analysers

Mains Analyser NA96

Technical Data - Part 2

INPUT

Input	AC, three-phase mains 3- and 4-wire connection
Voltage	NA96: 80 500 V (three-phase AC mains phase-phase), NA96+: 80 690 V (three-phase AC phase-phase)
	NA96: 50 290 V (AC mains), NA96+: 50 400 V (AC mains)
Current rating	Current rating 5 A – 1 A – only current transformer connection
Max. current I_{max}	Max. current I_{max} 1.2 In continuous
Overload	Overload 20 In/0.5 s
Nominal frequency	Nominal frequency 50 Hz
Operating frequency	Operating frequency 47 63 Hz
Type of measurement	Type of measurement True RMS value
Harmonic content	Harmonic content NA96: up to the 16th harmonic, NA96+: up to the 22nd harmonic
Start of measurement (energy meter)	< 5 s
Intrinsic consumption	Voltage path: < 0.5 VA (per phase), current path: < 0.5 VA (per phase)

AUXILIARY VOLTAGE

Auxiliary voltage	80 265 V AC
Nominal frequency	50 Hz
Operating frequency	47 63 Hz
Intrinsic consumption	< 4 VA (without optional modules)
Auxiliary voltage	110 300 V DC
Intrinsic consumption	< 3.5 W (without optional modules)
Reverse polarity protection	yes

INSULATION

Installation category	III
Pollution degree	2
Insulation voltage rating	300 V (phase - neutral)
Surge voltage protection	6 kV, 1.2/50 μ s, 0.5 J
Test circuit	Measurement input, auxiliary voltage
Test voltage	4 kV, rms, 50 Hz/1 min
Test circuit	All circuits and earth

ELECTROMAGNETIC COMPATIBILITY

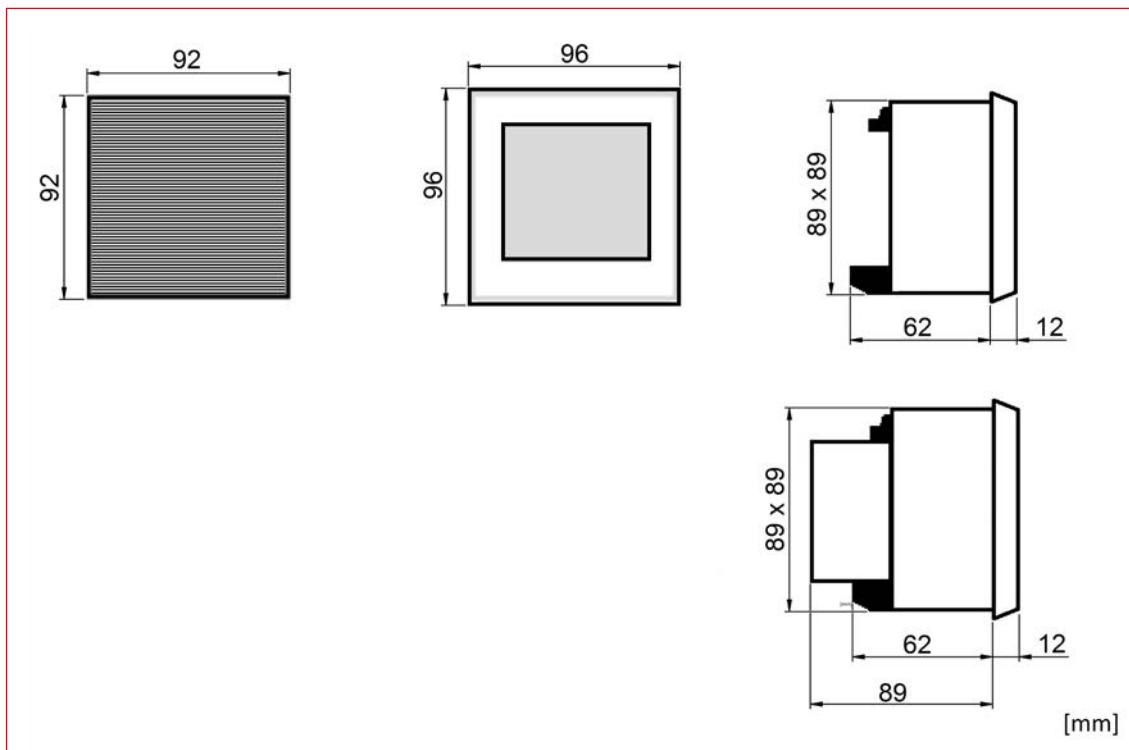
Emission and immunity tests	Acc. to EN 62052-11
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AMBIENT CONDITIONS

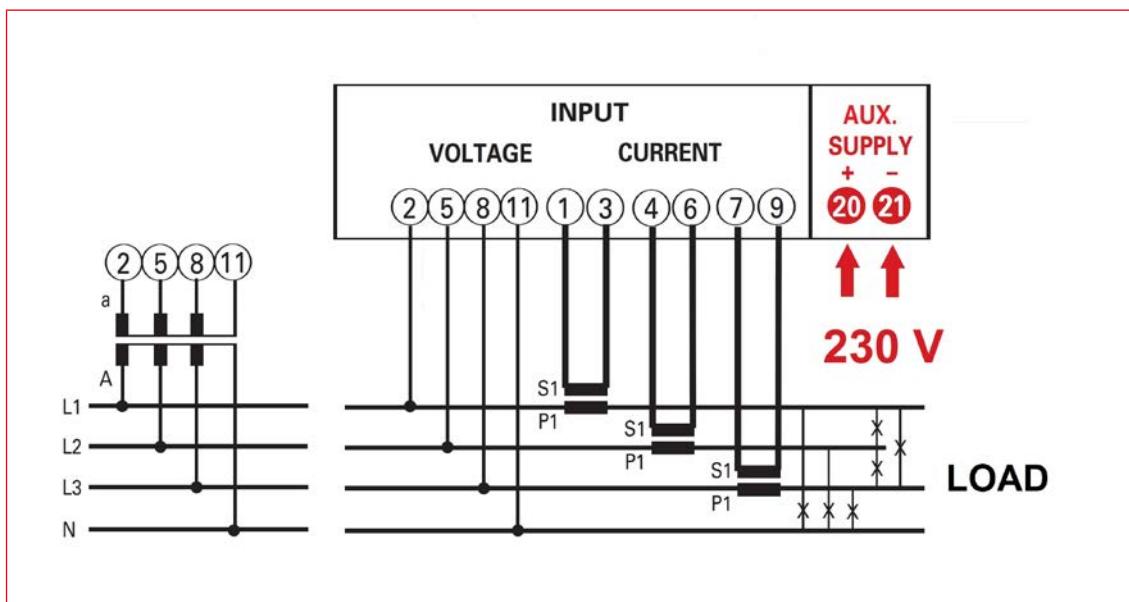
Reference temperature	23 °C ± 2 °C
Operating temperature	-5 ... 55 °C
Limit range for storage and transport	-25 ... 70 °C
Temperature influence	< 0.1%/ $^{\circ}$ C
Power dissipation for thermal dimensions of the control cabinet	< 5 W

■ Mains Analyser NA96

■ MGF39000 / MGF39001 Dimensions



■ MGF39000 Wiring Diagram



Measuring Instruments and Mains Analysers

Mains Analyser NA96

Plug-in Module for Alarm Contacts for NA96/NA96+ - MGF3900A--

DESCRIPTION

Programming of: measured quantity, limit value, type of alarm, relay behaviour, hysteresis, On delay, and Off delay. The NA96 and NA96+ modules in conjunction with the multifunction module allow the monitoring of two measured quantities by two limit contacts. Each multi-function module, NA96 and NA96+, can accommodate up to two MGF3900A modules so that 4 limit contacts are available.

PROGRAMMABLE PARAMETERS

Values: 4-wire three-phase mains, 3 current transformers (3n3E)	U1, U2, U3 Phase voltage U12, U23, U31 Phase-to-phase voltage A1, A2, A3 Phase current P Active power (total) P1, P2, P3 Active power (phase) VAr Reactive power (total) VAr1, VAr2, VAr3 Reactive power (phase) PF Power factor FrEq Frequency
Values: 3-wire three-phase main, 3 current transformers (3-3E) 3-wire three-phase power, 2 current transformers (ARON) (3-2E)	U12, U23, U31 Phase-to-phase voltage A1, A2, A3 Phase current P Active power (total) VAr Reactive power (total) PF Power factor FrEq Frequency
Values: AC mains (1-n1E)	U1 Phase voltage A1 Phase current P Active power VAr Reactive power PF Power factor FrEq Frequency
Limit value	Alarm type: Min and Max contact Relay state: Relay On or Off in normal state Hysteresis: 0...20% On delay: 0...99 s Off delay: 0...99 s

OUTPUT

Output:	2 relays with CO contacts SPDT-NO, potential-free
Contact load:	5A 250V AC cosφ 1 – 3A 250V AC - cosφ 0,4 – 5A 30V DC

AUXILIARY VOLTAGE (data apply to a combination of NA96 + MGF3900A module)

Intrinsic consumption MGF3900A:	≤ 1VA
Intrinsic consumption NA96 + module MGF3900A:	≤ 5VA
Intrinsic consumption NA96 + 2 modules MGF3900A:	≤ 6VA

ELECTRICAL SAFETY (data apply to a combination of NA96 + MGF3900A module)

Test voltage:	2 kV rms 50 Hz/1 min
Test circuits:	Measurement input, auxiliary voltage, output 1 - output 2

HOUSING

Housing:	Module with connector (for connecting to NA96)
Housing depth:	81 mm (NA96 + module)
Connection:	Screw terminal
Housing material:	Rigid cable max. 4 mm ² , flexible cable max. 2.5 mm ² Polycarbonate, self self-extinguishing

Mains Analyser NA96

Plug-in Module for Impulse Contacts for NA96/NA96+ - MGF3900I--

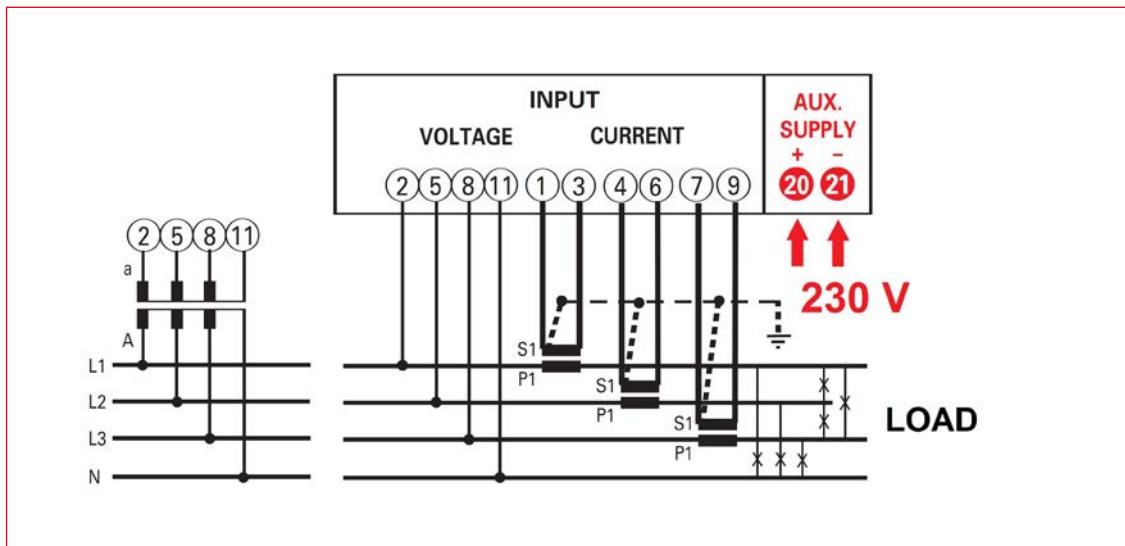
DESCRIPTION

Programming of: Energy allocation (active and/or reactive), pulse value and pulse duration. The module MGF3900I in combination with a device of type NA96 and NA96+ allows the transfer of energy values. Both independent and galvanically isolated pulse outputs can be freely allocated to active and/or reactive energy. For each device (NA96), a maximum of two modules MGF3900I can be used, resulting in 4 pulse outputs.

PROGRAMMABLE PARAMETERS (for each output)

Allocatable quantity:	Active or reactive energy
Pulse value:	1imp/10Wh - 100Wh - 1kWh - 10kWh - 100kWh - 1MWh - 10MWh
Pulse duration:	1imp/10varh - 100varh - 1kvarh - 10kvarh - 100kvarh - 1Mvarh - 10Mvarh 50 - 100 - 200 - 300ms
OUTPUT	
Output:	2 optical relays with potential-free contacts SPST-NO
Loading capacity:	110 V AC/DC - 50mA
AUXILIARY VOLTAGE (data apply to a combination of NA96 + module MGF3900I)	
Intrinsic consumption MGF3900I:	≤ 1VA
Intrinsic consumption NA96 + module MGF3900I:	≤ 5VA
Intrinsic consumption NA96 + 2 modules MGF3900I:	≤ 6VA
ELECTRICAL SAFETY (data apply to a combination of NA96 + module MGF3900I)	
Test voltage:	2 kV R.M.S. 50Hz/1min
Test circuits:	Measurement input, auxiliary voltage, output 1 - output 2
HOUSING	
Housing:	Module with connector (for connecting to NA96)
Housing depth:	81 mm (NA96 + module)
Connection:	Screw terminal
Housing material:	Rigid cable max. 4 mm ² , flexible cable max. 2.5 mm ² Polycarbonate, self-extinguishing

MGF3900I Wiring Diagram



Measuring Instruments and Mains Analysers

Mains Analyser NA96

Plug-in Module for Analog Contacts for NA96/NA96+ - MGF3900M--

DESCRIPTION

Programming of: Measured quantity, initial value of the measuring range, final value of the measuring range, output 0...20 mA - 4...20 mA. The module MGF3900M in conjunction with the multi-function module NA96 and NA96+ allows the mapping of two measured quantities to the analogue signal 0... 20 mA signal and/or 4... 20 mA. Each multi-function module NA96 and NA96+ can accommodate a maximum of 2 modules MGF3900M so that 4 analogue outputs are available.

PROGRAMMABLE PARAMETERS

Values: 4-wire three-phase mains, 3 current transformers (3n3E)	U1, U2, U3 Phase voltage
	U12, U23, U31 Phase-to-phase voltage
	A1, A2, A3 Phase current
	P Active power (total)
	P1, P2, P3 Active power (phase)
	VAr Reactive power (total)
	VAr1, VAr2, VAr3 Reactive power (phase)
	PF Power factor
	FrEq Frequency
	U12, U23, U31 Phase-to-phase voltage
Values: 3-wire three-phase main, 3 current transformers (3-3E) 3-wire three-phase power, 2 current transformers (ARON) (3-2E)	A1, A2, A3 Phase current
	P Active power (total)
	VAr Reactive power (total)
	PF Power factor
	FrEq Frequency
	U1 Phase voltage
	A1 Phase current
	P Active power
	VAr Reactive power
	PF Power factor
Values: AC mains (1-n1E)	FrEq Frequency

OUTPUT

Output signal:	0...20mA, 4...20mA
Initial value of the measuring range:	Value of the measured quant. that is 0 mA (for output 0 .. 20 mA or 4 mA (for output 4...20 mA).
Final value of the measuring range:	Value of the measured quantity that is 20 mA
Type:	Unidirectional
Accuracy:	Class 0.5
Set time:	≤ 600ms
Nominal current:	0...20 und 4...20mA
Output burden:	≤ 750 Ω
AUXILIARY VOLTAGE (data apply to a combination of NA96 + module MGF3900M)	
Intrinsic consumption MGF3900M:	≤ 1VA
Intrinsic consumption NA96 + module MGF3900M:	≤ 6VA
Intrinsic consumption NA96 + 2 modules MGF3900M:	≤ 8VA

ELECTRICAL SAFETY (data apply to a combination of NA96 + module MGF3900M)

Test voltage:	2 kV rms 50 Hz/1 min
Test circuits:	Measurement input, auxiliary voltage, output 1 - output 2

HOUSING

Housing:	Module with connector (for connecting to NA96)
Housing depth:	81 mm (NA96 + module)
Connection:	Screw terminal
Housing material:	Rigid cable max. 4 mm ² , flexible cable max. 2.5 mm ² Polycarbonate, self-extinguishing

Mains Analyser NA96

Plug-in Module Energy Value Storage - RS485 Interface for NA96/NA96+ - MGF3900S--

DESCRIPTION

Module MGF3900S combined with meters of NA 96HD/HD+ series makes available, by RS485 communication, all the data relevant to carried out measurement as well as the configuration parameters. Thanks to the internal storage, it is possible to store the energy counts of the main measured parameters. By the RS485 communication it is possible to query the device having access to the stored data.

PROGRAMMABLE PARAMETERS - MEMORY	
Values:	U1, U2, U3 Phase voltage U12, U23, U31 Phase-to-phase voltage A1, A2, A3 Phase current P Active power (total) P1, P2, P3 Active power (phase) VAr Reactive power (total) VAr1, VAr2, VAr3 Reactive power (phase) PF Power factor FrEq Frequency State of alarms
Clock:	hour, minutes, seconds
Date:	day, month, year
Daylight saving time: s	starting date and time, ending date and time
Time interval between the data backup:	2-5-10-30-60 seconds – 2-5-10 minutes
Reset saved data	possible

RS485 COMMUNICATION

Isolation:	Galvanically insulated from input and aux. supply (NA 96HD/HD+)
Standard:	RS485 - 3 wire
Transmission:	serial asynchronous
Protocol:	compatible JBUS/MODBUS
Bit number:	8
Stop bit:	1
Required response time to request:	≤ 200ms
Meters that can be connected on the bus:	32 (up to 255 with RS485 repeater)
Highest distance from supervisor:	1200 m

PROGRAMMABLE PARAMETERS - RS485

Address:	1...255
Baud rate:	4.800 - 9.600 - 19.200 - 38.400 bit/s 138.400 : only for NA 96 / NA96+
Parity bit:	none - even - odd

AUXILIARY SUPPLY

Value referred to combination NA 96 and MGF3900S interface	≤ 5VA
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INSULATION (EN61010)

A.C. voltage test:	2 kV R.M.S. 50Hz/1min
Considered circuits:	measure, aux. supply, RS485 communication

HOUSING

Housing:	Module with connector (for connecting to NA96)
Housing depth:	81 mm (NA96 + module)
Connection:	Screw terminal
Housing material:	Rigid cable max. 4 mm ² , flexible cable max. 2.5 mm ² Polycarbonate, self-extinguishing

Measuring Instruments and Mains Analysers

■ Mains Analyser NA96

■ Plug-in Module with RS485 Interface for NA96 - MGF3900R--

DESCRIPTION

The module MGF3900R in conjunction with the device of type NA 96 and NA96+ allows read-out of all available parameterized data through the RS485 interface.

RS485 INTERFACE

Isolation:	Galvanic isolation between input and supply (NA96)
Standard:	RS485 - 3 wire
Transfer:	Asynchronous serial
Protocol:	Compatible with JBUS / MODBUS
Number of bits / stop bits:	8 / 1
Data read-out time:	≤ 200ms
Number of devices to be connected:	32 (up to 255 with RS485 repeater)
Maximum distance of devices:	1200m

PROGRAMMABLE PARAMETERS

Address:	1...255
Transfer speed:	4.800 - 9.600 - 19.200 - 38.400 bit/s
Parity bit:	none - even - odd

AUXILIARY VOLTAGE (data apply to a combination of NA96 + module MGF3900R)

Intrinsic consumption:	≤ 5VA
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ELECTRICAL SAFETY (data apply to a combination of NA96 + module MGF3900R)

Test voltage:	2 kV rms 50 Hz/1 min
Test circuits:	Measurement input, auxiliary voltage, output 1 - output 2

HOUSING

Housing:	Module with connector (for connecting to NA96)
Housing depth:	81 mm (NA96 + module)
Connection:	Screw terminal
Housing material:	Rigid cable max. 4 mm ² , flexible cable max. 2.5 mm ² Polycarbonate, self-extinguishing

■ Interface Communication Ethernet for NA96/NA96+ - MGF3900E--

DESCRIPTION

Modul MGF3900E combined with meters of NA96/NA96+ series makes available by ethernet communication the relevant date measurements.

ETHERNET COMMUNICATION

Isolation:	Galvanically insulated from input and aux. supply (NA96/NA96+)
Standard:	IEEE802.3
Baud rate:	10 Mb/s

PROGRAMMING

For programming use a browser (for instance Internet Explorer), by consulting the manual supplied with module MGF3900E.

AUXILIARY SUPPLY

Value referred to combination NA96/NA96 and interface MGF3900E	≤ 5VA
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HOUSING

Housing:	Module with connector (for connecting to NA96)
Housing depth:	81 mm (NA96 + module)
Connection:	RJ45
Housing material:	Polycarbonate, self-extinguishing

■ Plug-in Module for M-Bus for NA96/NA96+ - MGF3900B--

DESCRIPTION

The module MGF3900B in conjunction with the device of type NA 96 allows reading of kWh by the M-bus interface. Not calibratable!

M-BUS COMMUNICATION

Isolation:	Galvanic isolation between input and supply (NA96/NA96+)
Standard:	EN 1434-3
Transfer:	Asynchronous serial
Protocol:	M-BUS
Number of bits:	8
Stop bit:	1

PROGRAMMABLE PARAMETERS

Address:	0...250
Baud rate:	300 - 600 - 1.200 - 2.400 - 4.800 - 9.600 bit/s

AUXILIARY VOLTAGE (data apply to a combination of NA96 + module MGF3900B)

Intrinsic consumption:	≤ 5VA
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ELECTRICAL SAFETY (data apply to a combination of NA96 + module MGF3900B)

Test voltage:	2 kV rms 50 Hz/1 min
Test circuits:	Measurement input, auxiliary voltage, output 1 - output 2
HOUSING	
Housing:	Module with connector (for connecting to NA96)
Housing depth:	81 mm (NA96 + module)
Connection:	Screw terminal
Housing material:	Rigid cable max. 4 mm ² , flexible cable max. 2.5 mm ² Polycarbonate, self-extinguishing

■ Mains Analyser NA96

■ Plug-in Module with Profibus Interface for NA96/NA96+ - MGF3900P--

DESCRIPTION

The module MGF3900P in conjunction with the multi-function module NA 96 and NA96+ allows the readout of all measured values and configuration parameters via PROFIBUS communication.

PROFIBUS COMMUNICATION

Isolation:	Galvanic isolation between input and auxiliary voltage (NA96)
Standard:	PROFIBUS EN50170
Response time:	≤ 10ms
Maximum distance from master:	Standard
Baud rate:	up to 3 Mbps
PROGRAMMABLE PARAMETERS	
Address:	1...127
AUXILIARY VOLTAGE (data apply to a combination of NA96 + module MGF3900P)	
Intrinsic consumption:	≤ 5VA
ELECTRICAL SAFETY (data apply to a combination of NA96 + module MGF3900P)	
Test voltage:	2 kV rms 50 Hz/1 min
Test circuits:	Measurement input, auxiliary voltage, output 1 - output 2
HOUSING	
Housing:	Module with connector (for connecting to the device NA96)
Housing depth:	81 mm (NA96 + module)
Connection:	SUB-D, 9-pole
Housing material:	Polycarbonate, self-extinguishing

■ Plug-in Module for Lonworks for NA96 and NA96+ - MGF3900L--

DESCRIPTION

The module MGF3900L in conjunction with the multi-function module NA 96 and NA96+ allows the readout of all measured values and configuration parameters via LONWORKS communication.

LONWORKS COMMUNICATION

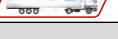
Isolation:	Galvanic isolation between input and auxiliary voltage (NA96)
Standard:	FTT10
AUXILIARY VOLTAGE (data apply to a combination of NA96 + module MGF3900L)	
Intrinsic consumption:	≤ 5VA
ELECTRICAL SAFETY (data apply to a combination of NA96 + module MGF3900L)	
Test voltage:	1 kV R.M.S. 50Hz/1min
HOUSING	
Housing:	Module with connector (for connecting to NA96)
Housing depth:	81 mm (NA96 + module)
Connection:	Screw terminal
	Rigid cable max. 4 mm ² , flexible cable max. 2.5 mm ²
Housing material:	Polycarbonate, self-extinguishing

■ Software

Functions:	Data acquisition via RS485 serial port and/or Ethernet up to 15 channels Instantaneous displays of parameters measured by devices (multifunction NA96 or NA96+) concentrators used for accounting of electricity or other sources Analogic or digital display Realization of graphic trends for one or more magnitudes with the opportunity to export in a tabular form Setting of software alarm thresholds to password-enabled users Display of active alarms Historical archive of events and alarms Monitoring of energy consumption for each device or for set creating one or more tariff calendars Web-server function to grant remote access to the central system where MIDAs Evo is installed using a simple Internet browser by specifying the IP address in the address bar
Connection:	The standard RS485 can support up to 31 devices, but using a repeater interface every 31 units it can be increased up to 247 units. Using a PC connected to a company LAN network or to a local switch, through multiple interfaces MGZEM001 or MGF3900E, it is possible to create networks up to 1020 devices (max. number that the MIDAs Evo software can manage).
Versions:	NA96-Software MIDAsEvo1 up to 5 devices (MGF39SE1) NA96-Software MIDAsEvo2 up to 20 devices (MGF39SE2) NA96-Software MIDAsEvo3 unlimited devices (MGF39SE3)

Measuring Instruments and Mains Analysers

Mains Analyser NA96

DESCRIPTION	AVAILABLE	ORDER NO.
Mains Analyser NA96		
Netanalyser 96x96mm, NA96		MGF39000
Netanalyser 96x96mm, NA96+		MGF39001
Modules		
for alarm contacts		MGF3900A
for Impulse Contacts		MGF3900I
for analog contacts		MGF3900M
energy value storage - RS485 interface		MGF3900S
with RS485 interface, Modbus/JBUS compatible		MGF3900R
Interface communication Ethernet with MIDAsEvo-software		MGF3900E
for M-Bus		MGF3900B
with profibus interface		MGF3900P
for Lonworks		MGF3900L
Accessories and Software		
Ethernet module, din-rail		MGZEM001
Software MIDAsEvo1 up to 5 devices with E-Mail licence		MGF39SE1
Software MIDAsEvo2 up to 20 devices with USB-dongle		MGF39SE2
Software MIDAsEvo3 unlimited devices/USB-dongle		MGF39SE3

