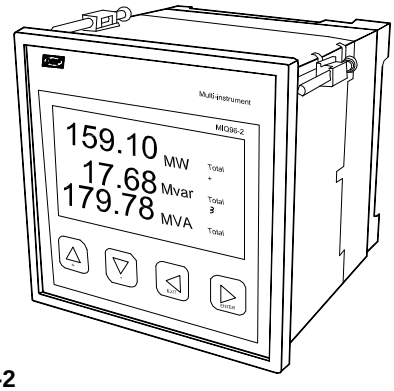
Type MIQ96-2

Multi-instrument

4921210108D

- ***All 1 or 3-phase AC measurements, true RMS***
- ***Programmable CT and VT ratios***
- ***More than 50 displayed parameters (V, A, kW, kVA, kvar, kWh, PF, Hz, MD, THD etc.)***
- ***Multi language support***
- ***Serial RS485 output for all values***
- ***Pulse output for kWh and kvarh or limit switches***
- ***Configurable display***



MIQ96-2

Application

The MIQ96-2 multi-instrument is a microprocessor-based measuring unit providing measurement of all electrical quantities on a single phase or 3-phase electric energy distribution network, showing the measurements on the built-in display and transmitting these as:

- 2 pulse outputs for kWh and kvarh
- A serial output RS485

The MIQ96-2 can replace several instruments in all electrical measuring applications and can be applied both as a normal instrument and as a remote value-reading unit, where all measured values are transmitted to the remote control system via the serial interface.

The MIQ96-2 measures true RMS values on all network topologies with/without neutral and with both balanced and unbalanced load.

The MIQ96-2 contains all necessary measuring circuits and presents all values on a graphic LCD with yellow/green backlight. Messages are presented in clear text, all measuring values in engineering units.

The MIQ96-2 is a flexible and programmable unit, which enables the user to easily adapt the unit to the application in question. Reset of counters and change of parameters can be password protected.

Standard functions

The unit is designed for measurement on a 3-phase or 1-phase network.

Measured and calculated values on a 3W4 connection:

- Current (3-phase actual current, neutral current, average current, THD in each phase)
- Phase to neutral voltage (3-phase actual voltage, average voltage, THD in each phase, phase angle)
- Phase to phase voltage (3-phase actual voltage, average voltage, THD between phase 1, 2 and 3)
- Active power (3-phase W total and W for each phase)
- Reactive power (3-phase var total and var for each phase)
- Apparent power (3-phase VA total and VA for each phase)
- Power factor PF (3-phase PF total and PF for each phase)
- Frequency
- Energy measuring counter Export and Import

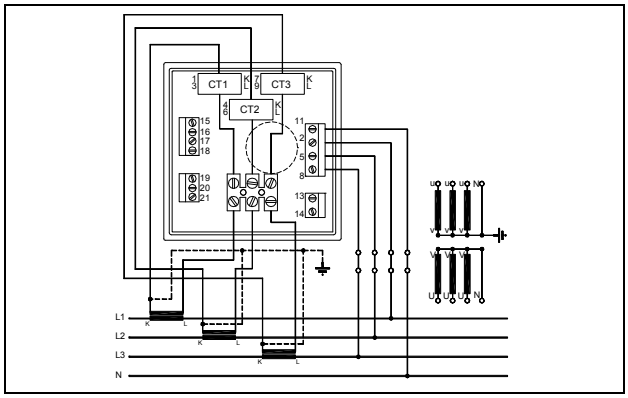
  4 counters: (1) export kWh, (2) export kvarh
  (3) import kWh, (4) import kvarh

- Maximum demands (load from consumer)
  The MIQ96-2 enables measurement of MDs of total active, reactive and apparent power, moreover the sum of currents.
  The MIQ96-2 can be set up for one of three different modes for calculation of MDs:
  a. Thermal (bimetal element)
  b. Fixed window (average value for one window)
  c. Sliding window (average value for more windows)

Connection

In the menu “Setting” set up for the following connections are available: 1W, 1W3, 2W3, 1W4, 3W4.

Principle diagram for 3W4 connection:



RS485 serial output

RS485 remote value-reading of all values measured by the MIQ96-2.
RS485 allows remote entering of password, time, MD, reset of counters etc.
Modbus standard telegram: See User’s Manual and Serial Interface Manual, can be downloaded from www.deif.com.

Energy measurement by 2 relay outputs

For counter 1 and 2:
The 2 potential free relay outputs can be programmed to transmit any fixed number of pulses per produced kWh (1) or kvarh (2). Alternatively these relays can be configured as limit switches. See Appendix for User’s Manual for further information.

Universal AC and DC aux. supply:
48…230V AC 50/60Hz and 24…220V DC.

DEIF A/S

Type MIQ96-2

Technical specifications

Meas. voltage Un: Ph-N 230V AC Ph-Ph 400V AC, range 0.1…1.5 x Un
Consumption: < 0.1VA per phase

Overload capacity:
1.5 x Un continuously
2 x Un for 10s

Meas. current In: -/1A or -/5A, range 0…1.6 x In
Consumption: < 0.1VA per phase

Overload capacity:
3 x In continuously
25 x In for 3s
50 x In for 1s

Meas. frequency: 50/60Hz, range 45…65Hz

Auxiliary supply: Working range:
40…276V AC 40...65Hz
19…300V DC

Overload capacity:
1.2 x Un continuously
1.5 x Un for 10s

Consumption: < 5VA

Accuracy:

Phase voltage Ph-N	0.5% of range
Phase - phase voltage	1.0% of range
Current	0.5% of range
Neutral current	1.0% of range
Active power	0.5% of range
Reactive power	0.5% of range
Apparent power	0.5% of range
Power factor	0.5% of range
MD values	1.0% of range
Active energy EN61036:	1996 class1
React. energy EN61268:	1995 class2
Frequency	0.05% of reading
THD	1.0%

Note: All measurements are calculated with harmonics present up to 15th harmonics

Response time: 64 periods ~ 1.28s at 50Hz

Real time clock: 1 minute/month

Back up battery: Producer: Varta
Type: CR 2032 lithium battery

Battery life time: Approx. 6 years (at 23°C – typical)

Relay outputs

Contact ratings: 250V - 6A - 1500VA (AC)
(250V AC - 6A resistive AC load 100.000 operations)

35V - 6A - 210W (DC)
(30V DC - 6A resistive load 500.000 operations)

Contact voltage: Max. 250V (AC)
Max. 100V (DC)

Isolation: 1000V (AC) between open contacts
4000V (AC) between coil and contacts

Pulse: Max. pulses per hour 4000
Pulse duration 10…300ms

Fuse: All voltage inputs ought to be protected by a 2A fuse

RS485 port

Connection type: Multi-drop (32 connections per link)

Signal levels: RS485

Cable type: Belden 3105A or equivalent (twisted pair)

Max. cable length: up to 1000m

Connector: Screw terminals

Isolation: 3.7 kV rms for 1 minute between all terminals and all other circuits

Transmission

Mode: Asynchronous

Message format: Modbus RTU

Data rate: 1200 to 115200 bits/s

Safety: To EN 61010-1
Installation Cat. III, 300V. Pollution degree 2
Installation Cat. II, 600V. Pollution degree 2

Test voltage: 3.7 kV rms according to EN 61010-1

EMC: To EN 61036
To EN 61326-1: 1997 for mentioned accuracy. (To EN 61000-6-1/2/3/4 for a general 1.0% accuracy on all measurements)

Connections: Permissible cross section of the connection leads:

Wire: Multi stranded: 1.5mm^2
Single stranded: 2.5mm^2

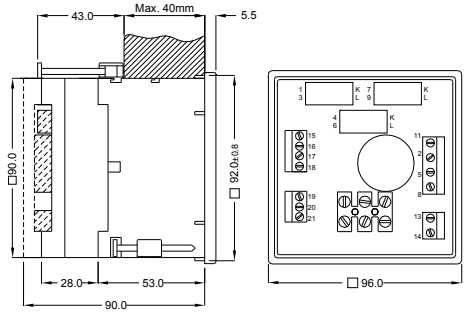
Protection: Enclosure: IP52
Terminals: IP20 with cover mounted
Terminals: IP00
According to EN 60529: 1989

Climate:

According to EN 61036:	1996
According to EN 61268:	1995
Operating temperature:	-10 to +65°C
Storage temperature:	-25 to +70°C
Annual mean relative humidity:	≤ 75% r.h.

Housing: Plastic, in compliance with UL 94 V0

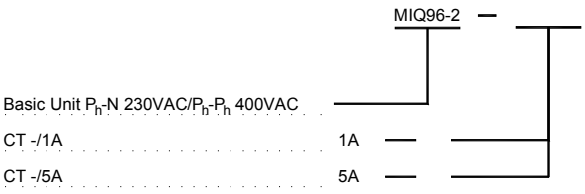
Dimensions (in mm)



Protection lid for terminals

Weight: Approx. 0.65 kg Panel cut-out: 92 x 92 mm + 0.8

Order specifications



Example: MIQ96-2 - 5A

For configuration/communication:
USB – RS485 signal converter

Due to our continuous development we reserve the right to supply equipment which may vary from the described.

***DEIF A/S**, Frisenborgvej 33*
DK-7800 Skive, Denmark
Tel.: +45 9614 9614, Fax: +45 9614 9615
E-mail: deif@deif.com, URL: www.deif.com