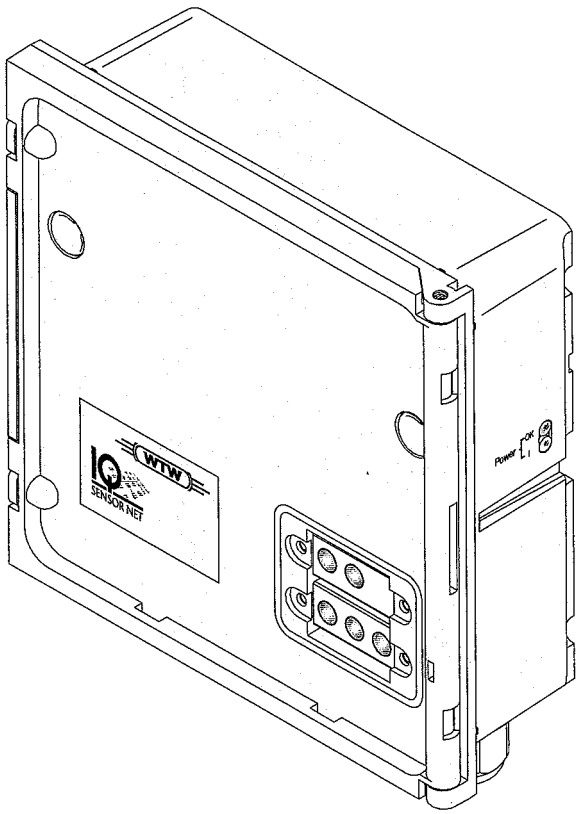
OPERATING MANUAL

ba64114e05 03/2018



IQ SENSOR NET
MIQ/24V

IQ SENSOR NET POWER SUPPLY MODULE (NOMINAL INPUT VOLTAGE 24 V AC/DC)

WTW

a xylem brand

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1 Overview

1.1 How to use this component operating manual

Structure of the IQ SENSOR NET operating manual

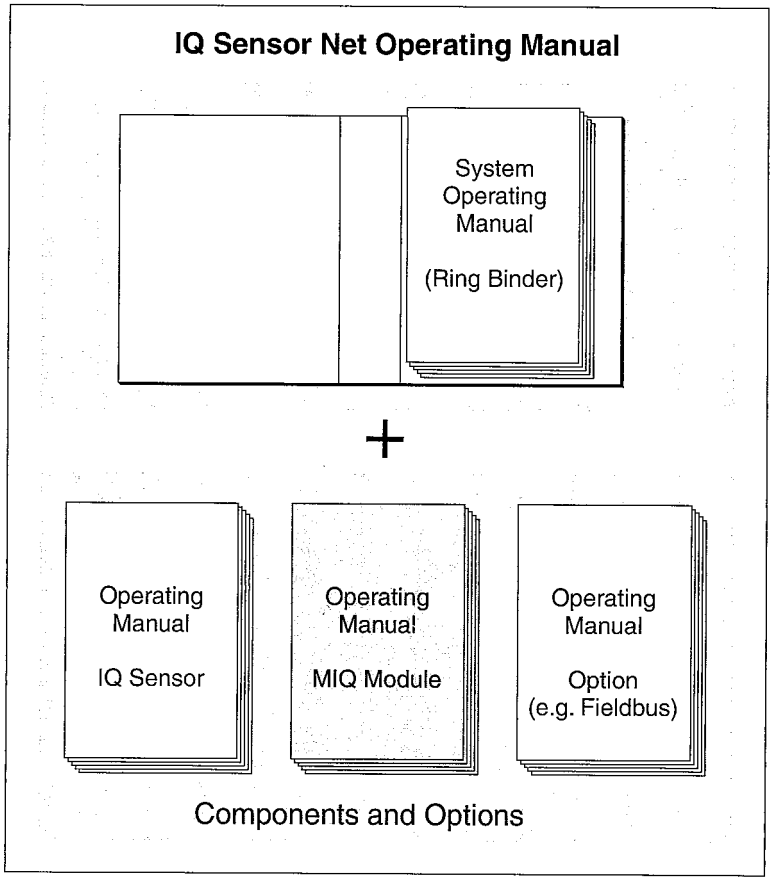


Fig. 1-1 Structure of the IQ SENSOR NET operating manual.

The IQ SENSOR NET operating manual has a modular structure like the IQ SENSOR NET system itself. It consists of a system operating manual and the operating manuals of all the components used.

Please file these component operating manuals into the ring binder of the system operating manual.

1.2 Features of the MIQ/24V

General characteristics

The MIQ/24V power supply supplies the IQ SENSOR NET with its operational voltage. The operational voltage is forwarded to the consumers in the following ways:

- In the case of stacked mounting, via the IQ SENSOR NET contacts on the front and rear of the module
- In the case of distributed mounting, via the IQ SENSOR NET SNCIQ cable
- In the case of sensors, via the SACIQ sensor connecting cable.

With the standard MIQ module housing, the MIQ/24V has the same characteristics as all MIQ modules regarding stability, leakproofness and weather resistance. It also provides the same wide variety of installation options (stacked mounting, canopy mounting, tophat rail mounting, etc.).

The number of MIQ/24V that are required depends on the number of consumers in the system and their power requirement as well as on the overall loss of power in the IQ SENSOR NET cables. Instructions for determining the correct number of power modules are given in the INSTALLATION chapter of the system operating manual.

Terminal strip

The MIQ/24V has the following electrical connections on the terminal strip inside the housing:

- 1 x 24 V AC/DC, two-pole
- 3 x SENSORNET connection.

2 Safety instructions

2.1 Safety information

2.1.1 Safety information in the operating manual

This operating manual provides important information on the safe operation of the product. Read this operating manual thoroughly and make yourself familiar with the product before putting it into operation or working with it. The operating manual must be kept in the vicinity of the product so you can always find the information you need.

Important safety instructions are highlighted in this operating manual. They are indicated by the warning symbol (triangle) in the left column. The signal word (e.g. "CAUTION") indicates the level of danger:



WARNING
indicates a possibly dangerous situation that can lead to serious (irreversible) injury or death if the safety instruction is not followed.



CAUTION
indicates a possibly dangerous situation that can lead to slight (reversible) injury if the safety instruction is not followed.

NOTE
indicates a situation where goods might be damaged if the actions mentioned are not taken.

2.1.2 Safety signs on the product

Note all labels, information signs and safety symbols on the product. A warning symbol (triangle) without text refers to safety information in this operating manual.

2.1.3 Further documents providing safety information

The following documents provide additional information, which you should observe for your safety when working with the measuring system:

- Operating manuals of other components of the IQ SENSOR NET system (power supply modules, controller, accessories)
- Safety datasheets of calibration and maintenance equipment (e.g. cleaning solutions).

2.2 Safe operation

2.2.1 Authorized use

The authorized use of the MIQ/24V consists of its use as a power supply module in the IQ SENSOR NET. Only the operation according to the instructions and technical specifications given in this operating manual is authorized (see chapter 5 TECHNICAL DATA). Any other use is considered unauthorized.

2.2.2 Requirements for safe operation

Note the following points for safe operation:

- The product may only be operated according to the authorized use specified above.
- The product may only be operated under the environmental conditions mentioned in this operating manual.
- The product may only be supplied with power by the energy sources mentioned in this operating manual.
- The product may only be opened if this is explicitly described in this operating manual (example: connecting electrical lines to the terminal strip).

2.2.3 Unauthorized use

The product must not be put into operation if:

- it is visibly damaged (e.g. after being transported)
- it was stored under adverse conditions for a lengthy period of time (storing conditions, see chapter 5 TECHNICAL DATA).

2.3 User qualification

Target group

The IQ SENSOR NET MIQ/24V was developed for online analysis. Some maintenance activities, e.g. changing the membrane caps in D.O. sensors, require the safe handling of chemicals. Thus, we assume that the maintenance personnel is familiar with the necessary precautions to take when dealing with chemicals as a result of their professional training and experience.

Special user qualifications

The following installation activities may only be performed by a qualified electrician:

- Connection of the MIQ/24V to the power supply.
- Connection of external, line voltage-carrying circuits to relay contacts (see module manual of the relay output module).

3 Installation

3.1 Scope of delivery

- MIQ module
- Accessory set, including:
  - 4 x cable glands (clamping range 4.5-10 mm) with seals and blind plugs
  - 4 x ISO blind nuts M4 with suitable cheese-head screws and plain washers
  - 2 x countersunk screws M3x6 to close the module lid (+ 2 replacement screws)
  - 1 x contact base with fixing screws
- Accessory kit, including
  - 1 x extension M16x1,5. to M20x1.5 with O-ring
  - 1 x cable gland
- Operating manual.

3.2 Installation in the IQ SENSOR NET

The IQ SENSOR NET provides a number of options for integrating the MIQ/24V mechanically and electrically in the system (stacked mounting, distributed mounting, etc.). The individual types of installation are described in detail in the INSTALLATION chapter of the system operating manual.



To achieve optimum heat transfer, it is recommended to always place the power supply module at the back of a module stack.

If there are several power supply modules in the IQ SENSOR NET, it is helpful if all the power supply modules are connected to a single power supply. As a result, the system can be easily switched on and off from a single location.

3.3 Safety requirements on the electrical installation

Electrical equipment (e.g. motors, contactors, cables, lines, relays) must meet the following requirements:

- Conformity with national regulations (e.g. NEC, VDE and IEC)
- Suitability for the electrical conditions at the installation site
  - Maximum operating voltage
  - Maximum operating current

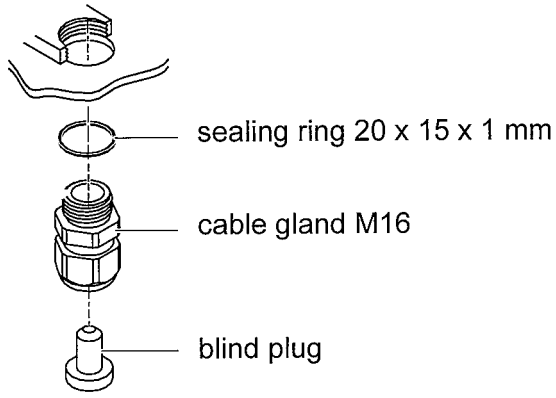
- Suitability for the environmental conditions at the installation site
  - Temperature resistance (minimum and maximum temperature)
  - Stability against UV light when used outdoors
  - Protection against water and dust (Nema or IP protection class).
- Suitable fusing of the electrical circuit
  - Overcurrent fuses (in accordance with the technical data of the device input or output)
  - Overvoltage class II surge limiters
- Suitable disconnecting device (e. g. switch or circuit breaker) for the mains supply of permanently mounted equipment with separate mains connection
  - in compliance with the following regulations
    - IEC 60947-1
    - IEC 60947-3
  - in the vicinity of the equipment (recommendation)
- Flame-resistant (cables and lines),
  in compliance with the following regulations
  - UL 2556 VW-1 (for USA, Canada)
  - IEC 60332-1-2 (outside of USA, Canada)

3.4 Electrical connections: General instructions

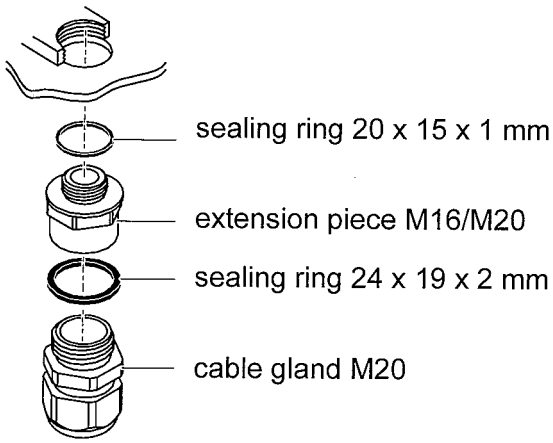
Cable glands

All electric cables are fed from below via prepared openings in the enclosure of the MIQ/24V. Cable glands with different clamping ranges are included with the MIQ/24V to provide sealing between the cable and enclosure as well as for strain relief. Select the matching cable gland for the respective cable diameter:

- **Small**, clamping range 4.5 to 10 mm. This cable gland is suitable for all IQ SENSOR NET sensor cables.



- **Large**, clamping range 7 to 13 mm. This cable gland is required for cable sheaths with an outside diameter of more than 10 mm and is screwed into the enclosure via an extension piece.



If necessary, you can order more large cable glands in a set of 4 pieces (Model EW/T, Order No. 480 051).

General installation instructions

Observe the following points when attaching connecting wires to the terminal strip

- Shorten all wires to be used to the length required for the installation
- Always fit all the ends of the wires with wire end sleeves before connecting them to the terminal strip
- Any wires that are not used and project into the enclosure must be cut off as closely as possible to the cable gland.
- Screw a small cable gland with sealing ring into each remaining free opening and close it with a blind plug.

WARNING

No free wires must be allowed to project into the housing. Otherwise, there is a danger of electric short circuit that may cause fire. Always cut off any wires that are not in use as closely as possible to the cable gland.

3.5 Connecting the 24 V AC/DC supply



WARNING

If the power supply is connected incorrectly, it may represent a danger to life from electric shock. Pay attention to the following points during installation:

- **The power supply must fulfill the specifications given on the nameplate and in chapter 5 TECHNICAL DATA (Safety Extra Low Voltage SELV).**
- **The MIQ/24V may only be connected to the 24 V AC/DC supply by a qualified electrician.**
- **The connection of the MIQ/24V may only be carried out when the supply is not carrying any voltage.**
- **When installed in a building, a switch or power switch must be provided as a disconnecting device for the MIQ/24V.**
  The interrupt facility must:
  - **be installed in the vicinity of the MIQ/24V, easily accessible by the user, and**
  - **identified as a disconnecting device for the MIQ/24V.**



Battery systems should be protected against total discharge. The MIQ/24V does not have an integrated protection against total discharge.

Materials required

- Wire end sleeves, suitable for the power line, with suitable crimping tool
- 1 x cable gland with sealing ring (included in scope of delivery of MIQ/24V).

Tools

- Cable stripping knife
- Wire stripper
- Phillips screw driver
- Small screw driver.

Preparing the 24 V AC/DC line

1 Cut off the cable to the required length.

2 Strip the cable insulation for approx. 45 mm.

3 Bare the wires 1 and 2 and fit them with wire end sleeves.

4 Maintenance and cleaning

4.1 Maintenance

The MIQ/24V requires no special maintenance. The general maintenance of IQ SENSOR NET components is described in the IQ SENSOR NET system operating manual.

4.2 Cleaning

The cleaning of IQ SENSOR NET components is described in the IQ SENSOR NET system operating manual.

5 Technical data

5.1 General data

Dimensions

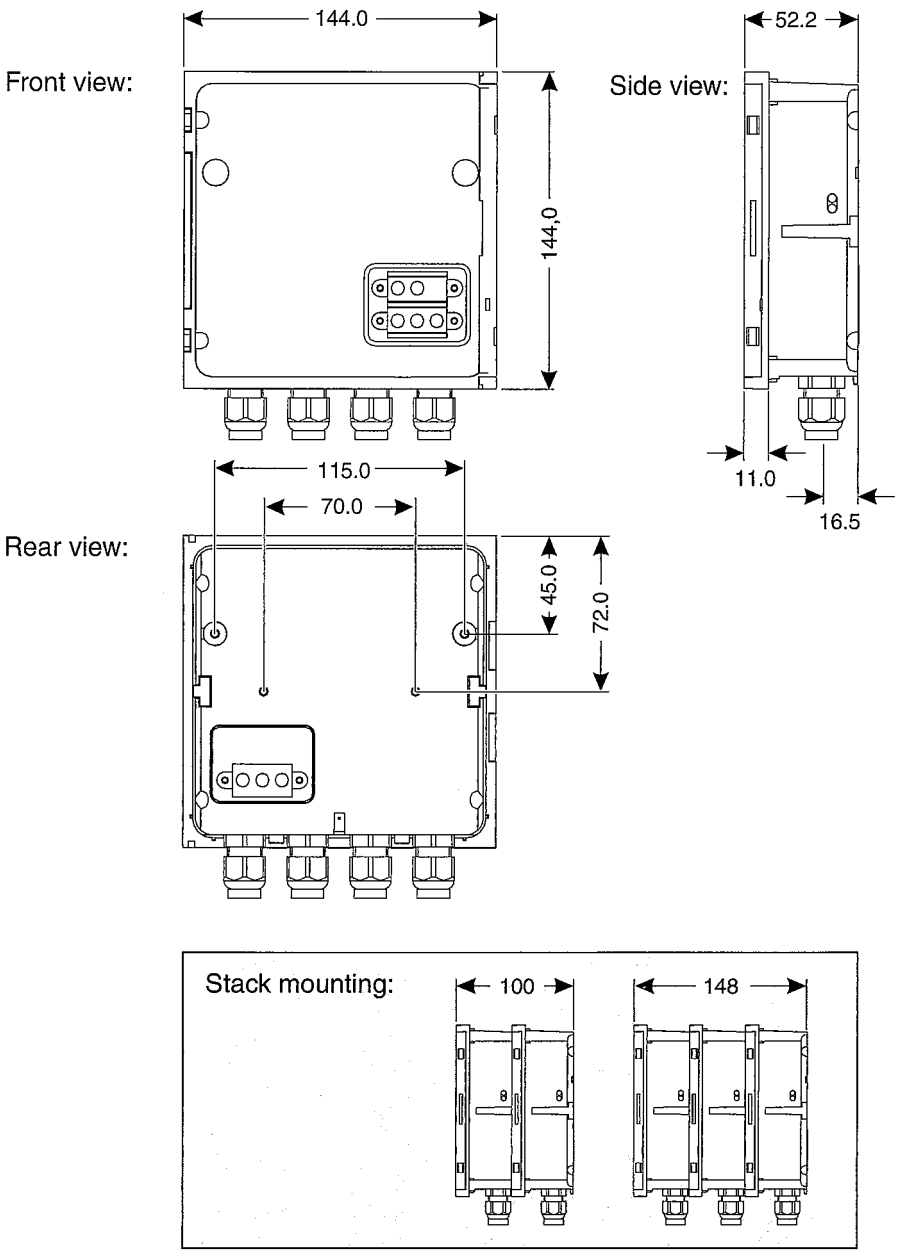


Fig. 5-1 Dimension drawing of MIQ module (dimensions in mm)

Mechanical structure

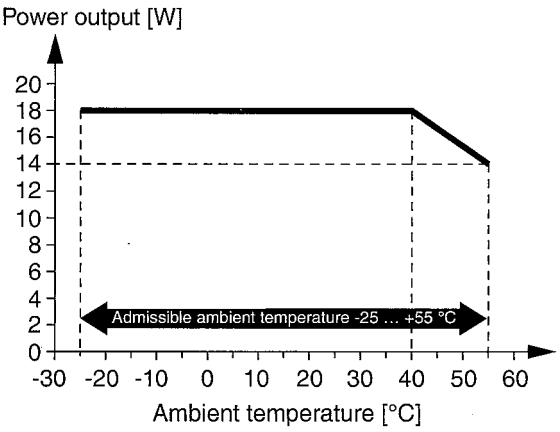
Maximum number of MIQ modules in a module stack	3
Enclosure material	Polycarbonate with 20 % glass fiber

	Weight	Approx. 0.5 kg
	Type of protection	IP 66 (not suitable for conduit connection).
Cable glands	Suitable for cable sheath diameter	4.5 - 10 mm or 9.0 - 13 mm
Ambient conditions	Temperature	
	Mounting/installation/ maintenance	+ 5 °C ... + 40 °C (+ 41 ... +104 °F)
	Operation	- 20 °C ... + 55 °C (- 4 ... + 131 °F)
	Storage	- 25 °C ... + 65 °C (- 13 ... + 149 °F)
	Relative humidity	
	Mounting/installation/ maintenance	≤ 80 %
	Yearly average	≤ 90 %
	Dew formation	Possible
	Site altitude	Max. 2000 m above sea level
Meter safety	Applicable norms	– EN 61010-1 – UL 61010-1 – CAN/CSA C22.2#61010-1
EMC product and system characteristics	EN 61326	EMC requirements for electrical resources for control technology and laboratory use – Resources for industrial areas, intended for indispensable operation – Interference emission limits for resources of class A
	System lightning protection	Noticeably extended qualitative and quantitative protective characteristics as opposed to EN 61326
	FCC, class A	

5.2 MIQ/24V

Electrical data

Power supply	Nominal voltage: 24 V AC/DC - 15 % / + 20 % Safety Extra Low Voltage (SELV) AC Frequency: 50/60 Hz in accordance with IEC 60038 Connection: 2-pole Line cross-section of connection: Europe: 1.5 ... 4.0 mm^2 USA: AWG 14 ... 12 Fuse rating on the operator side: 16 A maximum
Power consumption	Approx. 25 W
Output voltage	Max. 24 VDC via the IQ SENSOR NET (for details, see chapter TECHNICAL DATA of the IQ SENSOR NET system operating manual).
Power output	Up to 40 °C ambient temperature: 18 W; Above 40 °C: the power output decreases linearly to 14 W at 55 °C.
Instrument internal fuses	5 x 20 T 1.6 A, with UL approval Manufacturer: Littlefuse Type: Series 218



CAUTION
If the original fuse needs to be replaced, it may only be replaced by a fuse of the same type and manufacturer.

Terminal connections

IQ SENSOR NET connections	3 Additional connectable SENSORNET terminator (terminating resistor)	
Terminal type	Screw-type terminal strip, accessible by raising the lid	
Terminal ranges	Solid wires:	0.2 ... 4.0 mm^2 AWG 24 ... 12
	Flexible wires:	0.2 ... 2.5 mm^2

Cable glands

Suitable for cable diameter	4.5 ... 10 mm and 7.0 ... 13 mm



CAUTION

Only the line cross-sections specified under ELECTRICAL DATA, page 17 can be used for the 24 V AC/DC connection.

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1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

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Service and Returns:
Xylem Analytics Germany
Sales GmbH & Co. KG
WTW
Am Achalaich 11
82362 Weilheim
Germany

Tel.: +49 881 183-325
Fax: +49 881 183-414
E-Mail wtw.rma@xylem.com
Internet: www.xylemanalytics.com

xylem
Let's Solve Water

Xylem Analytics Germany GmbH
Am Achalaich 11
82362 Weilheim
Germany

CE

UK CA