IQ SENSOR NET
MIQ/CHV PLUS

Valve module for compressed air-operated sensor cleaning heads
Note
For the most recent version of the manual, please visit www.ysi.com.
MIQ/CHV PLUS - Contents

1 Overview ......................................................... 1-1

2 Safety instructions ............................................. 2-1
  2.1 Authorized use ............................................. 2-2
  2.2 General safety instructions ................................ 2-2

3 Installation ...................................................... 3-1
  3.1 Scope of delivery ............................................ 3-1
  3.2 Software requirements ...................................... 3-1
  3.3 Mounting for use in the IQ SENSOR NET .................... 3-1
  3.4 Connecting the valve control line ............................ 3-2
  3.5 Connecting the compressed air hoses ....................... 3-4
  3.6 Function check .............................................. 3-5

4 Settings ......................................................... 4-1
  4.1 Entering / editing the name of an output ..................... 4-2
  4.2 Linking the output with a sensor ............................ 4-3
  4.3 Deleting a link with an output ............................... 4-4
  4.4 Setting the valve output ..................................... 4-5
    4.4.1 Cleaning .................................................. 4-6
    4.4.2 Sensor-controlled ....................................... 4-9
    4.4.3 Manual control .......................................... 4-10
  4.5 Checking the status of the outputs .......................... 4-11

5 Maintenance and cleaning ....................................... 5-1
  5.1 Maintenance .................................................. 5-1
  5.2 Cleaning ..................................................... 5-1

6 What to do if .................................................. 6-1

7 Technical data ................................................. 7-1

8 Indexes .......................................................... 8-1
  8.1 Explanation of the messages .................................. 8-1
    8.1.1 Error messages .......................................... 8-1
    8.1.2 Informative messages .................................... 8-1

9 Contact Information ............................................. 9-1
  9.1 Ordering & Technical Support ............................... 9-1
9.2 Service Information ................................. 9-1

10 Accessories and options ............................. 10-1
1 Overview

General characteristics

The MIQ/CHV PLUS valve module provides a switchable compressed air valve for the operation of sensor cleaning heads.

The MIQ/CHV PLUS valve module registers on the IQ SENSOR NET system as an output (V). It appears in the list of outputs and can be linked with a sensor. Thus, the valve is controlled directly by the IQ SENSOR NET.

Alternatively, you can also control the valve via an external switch. The switch can consist of one of the following:

- any relay in the IQ SENSOR NET system
- the relay of a measuring transmitter with the R option
- any other switch (relay or sensor)

The valve module is connected with the external switch via a control line for this.

Warning

The valve circuit must not supply any unauthorized voltages or currents. It has to be made sure that the circuit at any time meets all requirements of a Limited circuit or Limited Power as well as of SELV (Safety Extra Low Voltage). For more details, see chapter 7 TECHNICAL DATA.
The following application example shows a cleaning system consisting of the CH cleaning head and a MIQ/CHV PLUS valve module:

**Application example**

![Diagram of CHV PLUS and CH cleaning head](image)

**Power supply**
When used in the IQ SENSOR NET, the valve module is supplied with voltage by the IQ SENSOR NET.

**IQ SENSOR NET compatibility**
The MIQ/CHV PLUS can be fully integrated in the IQ SENSOR NET using the MIQ standard module housing.

The housing 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, top hat rail mounting, etc.).
Terminal strip

The MIQ/CHV PLUS has the following electrical connections on the terminal strip inside the housing:

- 1 x valve circuit connection
- 2 x SENSORENENET connection

Note
If the valve is controlled via an external switch, only one SENSORENENET connection can be used due to the limited number of cable glands. SENSORENENET connection 1 or 2 can be selected.
2 Safety instructions

This operating manual contains special instructions that must be followed during the installation of the MIQ/CHV PLUS valve module. Thus, it is essential for the operator to read this component operating manual before carrying out any work with the system. Always keep the operating manual in the vicinity of the valve module.

**General safety instructions**

Safety instructions in this operating manual are indicated by the warning symbol (triangle) in the left column. The signal word (e.g. "Caution") indicates the danger level:

**Warning**

indicates instructions that must be followed precisely in order to prevent serious dangers to personnel.

**Caution**

indicates instructions that must be followed precisely in order to avoid slight injuries to personnel or damage to the instrument or the environment.

**Other labels**

**Note**

indicates notes that draw your attention to special features.

**Note**

indicates cross-references to other documents, e.g. operating manuals.
2.1 Authorized use

The authorized use of the MIQ/CHV PLUS consists of providing a control valve for compressed air-operated sensor cleaning heads. Please observe the technical specifications according to chapter 7 TECHNICAL DATA. Only operation according to the instructions in this operating manual is authorized.

Any other use is considered to be unauthorized. Unauthorized use invalidates any claims with regard to the guarantee.

2.2 General safety instructions

The MIQ/CHV PLUS is constructed and inspected according to the relevant guidelines and norms for electronic instruments (see chapter 7 TECHNICAL DATA).

It left the factory in a safe and secure technical condition.

Function and operational safety

The failure-free function and operational safety of the MIQ/CHV PLUS is only guaranteed if the generally applicable safety measures and the special safety instructions in this operating manual are followed during its use.

The failure-free function and operational safety of the MIQ/CHV PLUS is only guaranteed under the environmental conditions that are specified in chapter 7 TECHNICAL DATA.

Safe operation

If safe operation is no longer possible, the MIQ/CHV PLUS must be taken out of operation and secured against inadvertent operation. Safe operation is no longer possible if the MIQ/CHV PLUS:

- has been damaged in transport
- has been stored under adverse conditions for a lengthy period of time
- is visibly damaged
- no longer operates as described in this manual.

If you are in any doubt, contact the supplier of your MIQ/CHV PLUS.
3 Installation

3.1 Scope of delivery

The following parts are included in the scope of delivery of the MIQ/CHV PLUS:

- MIQ/CHV PLUS
- 2 x screwed cable glands with seals and blind plugs
- 2 x ISO blind nuts M4
- 2 x cheese-head screws M4x16 with plastic washer
- 1 x contact base
- 2 x plastic tapping screws for fixing the contact base
- 1 x hose clip
- Operating manual.

3.2 Software requirements

**System 182 (XT)**

Operation of the MIQ/CHV PLUS in the System 182 (XT) requires a software version of 3.15 or higher on the DIQ/S 182 Universal Transmitter.

**System 2020 XT**

Usage of the Sensor-controlled function with the system 2020 XT requires a controller software version of 2.80 or higher.

**Note**

It is possible to update the software if your components have older software versions. Please contact YSI.

3.3 Mounting for use in the IQ SENSOR NET

The IQ SENSOR NET provides a number of options for integrating the MIQ/CHV PLUS 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.
3.4 Connecting the valve control line

Note
The valve control line must be connected if the valve is not controlled via the IQ SENSOR NET system.

Warning
The valve circuit must not supply any unauthorized voltages or currents. It has to be made sure that the circuit at any time meets all requirements of a Limited circuit or Limited Power as well as of SELV (Safety Extra Low Voltage). For more details, see chapter 7 TECHNICAL DATA.

General installation instructions
Observe the following instructions when attaching connecting wires to the terminal strip:

- Shorten all the wires used to the length required for the installation.
- Basically, fit all stranded wire ends with wire end sleeves before connecting them to the terminal strip.
- Any wires that are not used and project into the housing must be cut off as closely as possible to the cable gland.

Materials required
- Wire end sleeves, suitable for the connecting wires, with suitable crimping tool
- 1 x cable gland with sealing ring (scope of delivery MIQ/CHV PLUS)

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

Warning
Danger of injury from lines that are under pressure. The compressed air glands in the housing may only be opened by a service technician authorized by YSI.
Connecting the control line to the terminal strip

1. Open the module.

2. Screw the cable gland (pos. 1 in Fig. 3-1) with the sealing ring (pos. 2) into the left connection opening.

3. Loosen the coupling ring (pos. 3 in Fig. 3-1).

4. Feed the valve control line through the left cable gland in the module housing.

5. Connect the wires of the valve control line (pos. 5 in Fig. 3-1) to the clamping termination for the valve control line. While doing so, pay attention to the specifications on the label located under the terminal strip.

6. Tighten the coupling ring (pos. 3 in Fig. 3-1).

**Caution**

No free wires must be allowed to project into the enclosure. Always cut off any wires that are not in use as closely as possible to the cable gland.
3.5 Connecting the compressed air hoses

**General instructions**
Pay attention to the following instructions when connecting the compressed air hoses (they can be connected either way round):

- Follow the specification of the compressed air according to chapter 7 TECHNICAL DATA.
- Only use hoses that match the compressed air connections.
- Secure all hose connections with hose clips.

**Open the compressed air line**
Pay attention to the following instructions if you want to open the compressed air line (e.g. during a modification):

**Warning**
Danger of injury from lines that are under pressure. Before opening the compressed air line, ensure that the section of line concerned is free of pressure. The compressed air glands in the housing may only be opened by a service technician authorized by YSI.
3.6  Function check

General instructions

This check is also suitable for the troubleshooting of malfunctions.

If the valve is not controlled via the IQ SENSOR NET system, the valve control line must be connected.

To check that the valve triggers correctly, proceed as follows:

Warning
Danger of injury from lines that are under pressure. The compressed air glands in the housing may only be opened by a service technician authorized by YSI.

1. **MIQ/CHV PLUS + IQ SENSOR NET:**
   - Put the IQ SENSOR NET system into operation.

2. **MIQ/CHV PLUS + measuring transmitter:**
   - Supply the power supply module with voltage and put the measuring transmitter into operation.
   - Adjust the cleaning intervals on the measuring system so that the valve opens.
   - Or
   - Open the valve in the *Valve function* menu with the *Manual control* function (see section 4.4.3).

3. Check whether there is a compressed air stream on the MIQ/CHV PLUS.
4 Settings

The MIQ/CHV PLUS module has a valve output. The MIQ/CHV PLUS valve module registers on the IQ SENSOR NET system as a valve output (V) and appears in the list of outputs.

On the terminal or Universal Transmitter, you can

- assign a name to the valve output (with the 2020 XT systems only, see section 4.1).
- link the valve output to a sensor (see section 4.2)
- erase the link of the valve output with a sensor (see section 4.3)
- set the valve output (see section 4.4)
- check the state of the valve output (see section 4.5)

Note

The general operating principles are given in the system operating manual or in the component operating manual of the terminal components.

Functions for the valve output

(see section 4.4)

You can set the following functions for the valve output:

- **Cleaning**
  (Setting of the cleaning procedure in the menu, *Settings of outputs and links*)

- **Sensor-controlled**
  (Setting of the cleaning procedure in the menu, *Settings of sensors and diff. sensors of the relevant sensor*)

- **Manual control**
4.1 Entering / editing the name of an output

For easier identification of the outputs, an individual name can be given to each output in the *Edit list of outputs* overview. This option is available with the 2020 XT system only.

1. Open the *Settings* menu with 📋.

2. Using 🔄 and ✅, select and confirm the menu item, *System settings -> Edit list of outputs*. The *Edit list of outputs* display opens.

3. Highlight a name in the *Name* column with 🔄 and confirm with ✅.

4. Select a letter, a numeral or a special character with 🔄 and confirm with ✅.

5. Complete the name of the output and confirm with ✅.
4.2 Linking the output with a sensor

The following steps describe operation with the 2020 XT system. With the System 182 (XT), the valve output of the MIQ/CHV PLUS can be found directly under the Settings menu (see system operating manual of the DIQ/S 182).

1. Open the Settings menu with ⑤.

2. Using ⑤ and ⑨, select and confirm the menu item, System settings -&gt; Settings of outputs and links. The Settings of outputs and links display opens.

3. Highlight the column with ⑤ and confirm with ⑨.

4. Highlight an output with ⑤ and confirm with ⑨. The Link with... display opens. The display shows a list of the sensors to which a link is possible.

5. Select a sensor with ⑤ and confirm with ⑨. The output is linked with the selected sensor.

Note

Outputs that are linked with sensors can be identified in the Ser. no. field of the Settings of outputs and links overview by the specification of the linked sensor.
4.3 Deleting a link with an output

If a link of a valve output with a sensor is no longer required, the link can be deleted.

The following steps describe operation with the 2020 XT system. With the System 182 (XT), the valve output of the MIQ/CHV PLUS can be found directly under the Settings menu (see system operating manual of the DIQ/S 182).

1. Open the Settings menu with ③.
2. Using ③ and ⑧, select and confirm the menu item, System settings -> Settings of outputs and links. The Settings of outputs and links display opens.
3. Highlight the column with ③ and confirm with ⑧.
4. Highlight an output with ③ and confirm with ⑧.
5. Select Erase link with ③ and confirm with ⑧. A security prompt appears.
6. Select Erase link with ③ and confirm with ⑧. The link is deleted.
4.4 Setting the valve output

The following steps describe operation with the 2020 XT systems. With the System 182 (XT), the valve output of the MIQ/CHV PLUS can be found directly under the Settings menu (see system operating manual of the DIQ/S 182).

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Call up the measured value display with [M].</td>
</tr>
<tr>
<td>2</td>
<td>Open the Settings menu with [S].</td>
</tr>
<tr>
<td>3</td>
<td>Highlight the Settings of outputs and links menu item with [3] and confirm with [OK]. The Settings of outputs and links display appears.</td>
</tr>
<tr>
<td>4</td>
<td>Highlight the Feature column with [3] and confirm with [OK].</td>
</tr>
<tr>
<td>5</td>
<td>Highlight a line for the valve output (Cx) in the Feature column with [3] and confirm with [OK]. The Settings of outputs and links display opens.</td>
</tr>
<tr>
<td>6</td>
<td>Highlight the Valve function menu item with [3] and confirm with [OK].</td>
</tr>
</tbody>
</table>

Select one of the functions in the following list with \[3\] and confirm with \[OK\].

*Fig. 4-4  150 - Settings of outputs and links*
4.4.1 Cleaning

The Cleaning function enables to start the sensor cleaning function automatically and time-controlled. The valve switches on or off the compressed air for the CH sensor cleaning head.

In order to set up the Cleaning function for a valve output, the valve output must be linked with a sensor (see section 4.2).

The cleaning cycle consists of Cleaning duration and Adjustment time.

During the cleaning cycle the Clean display for the sensor that is being cleaned flashes. The outputs linked with this sensor are frozen. The maintenance condition is active.

After the Cleaning duration, the relay is opened. During the following Adjustment time the outputs remain blocked. The outputs linked with this sensor are only released when the cleaning cycle is completed. The Clean display disappears. The maintenance condition is finished.

Testing the operativeness

You can test the operativeness of the cleaning system as follows: manually open or close the valve with the Manual control function (see section 4.4.3) and, while doing so, check the behavior of the cleaning system.

Alternatively, you can test the operativeness of the cleaning system by checking the performance of the function at the start time set up (reference time ± interval). To perform a test immediately, you can set the reference time so that the next cleaning cycle will start in a few minutes (settings: see following table).

---

### Function Description

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No function</td>
<td>The valve output is not used.</td>
</tr>
<tr>
<td>Cleaning</td>
<td>see section 4.4.1</td>
</tr>
<tr>
<td>Sensor-controlled</td>
<td>see section 4.4.2</td>
</tr>
<tr>
<td>Manual control</td>
<td>see section 4.4.3</td>
</tr>
</tbody>
</table>

8 Carry out the settings for the relay outputs with  and .

9 Highlight and confirm Save and quit with  and . The new settings are stored.
<table>
<thead>
<tr>
<th>Setting</th>
<th>Selection/Values</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference time (h)</td>
<td>0 ... 23 h</td>
<td>Time at which a cleaning cycle is started. Further cleaning cycles will be performed at the times specified by the cleaning interval.</td>
</tr>
<tr>
<td>Reference time (min)</td>
<td>0 ... 60 min</td>
<td></td>
</tr>
<tr>
<td>Interval unit</td>
<td>1 .. 7 d</td>
<td>Selection of range and unit for the Cleaning interval.</td>
</tr>
<tr>
<td></td>
<td>1 .. 24 h</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 .. 60 min</td>
<td></td>
</tr>
<tr>
<td>Cleaning interval</td>
<td>1/2/3/4/5/6/7 d</td>
<td>Repeat interval for the cleaning function: Time between the start time of a cleaning cycle and the start time of the next cleaning cycle*.</td>
</tr>
<tr>
<td></td>
<td>or:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/2/3/4/6/8/12/24 h</td>
<td></td>
</tr>
<tr>
<td></td>
<td>or:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5/10/15/20/30/60 min</td>
<td></td>
</tr>
<tr>
<td>Cleaning duration</td>
<td>0 ... 300 s</td>
<td>Duration of the cleaning</td>
</tr>
<tr>
<td>Adjustment time</td>
<td>0 ... 900 s</td>
<td>Time extension to allow the sensor to adjust to the test sample after cleaning.</td>
</tr>
</tbody>
</table>

* With short cleaning intervals, the adjustable values for the Cleaning duration and Adjustment time are limited. The following values apply:

<table>
<thead>
<tr>
<th>Cleaning interval</th>
<th>Cleaning duration</th>
<th>Adjustment time</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 10 min</td>
<td>max. 60 s</td>
<td>max. 120 s</td>
</tr>
<tr>
<td>≤ 20 min</td>
<td>max. 180 s</td>
<td>max. 300 s</td>
</tr>
</tbody>
</table>

**Note**
With this, the cleaning times are fixed. They only change when the reference time is changed.
Note
The reference time and all further cleaning times relate to the date and time of the system clock. How to set the system clock is described in the system operating manual.

**Example**

<table>
<thead>
<tr>
<th>Setting</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference time (h): 12</td>
<td>Reference time: 12:00 hours</td>
</tr>
<tr>
<td>Reference time (min): 0</td>
<td>This specifies the following start times:</td>
</tr>
<tr>
<td>Interval unit: Hours (h)</td>
<td>04:00, 12:00 and 20:00 hours</td>
</tr>
<tr>
<td>Cleaning interval: 8 h</td>
<td></td>
</tr>
</tbody>
</table>

---

**Fig. 4-5 Cleaning cycle**

1. Reference time
   - Start of a cleaning cycle \( t_1 \)
   - Start of the specified Cleaning duration \( t_1a \)

2. End of the specified Cleaning duration \( t_1a \)
   - Start of the specified Adjustment time \( t_1b \)

3. End of the specified Adjustment time \( t_1b \)
   - End of the cleaning cycle \( t_1 \)

4. Reference time ± Cleaning interval \( t_2 \)
   - Start of a cleaning cycle

\( t_1 \) Cleaning cycle = Cleaning duration \( t_1a \) Adjustment time \( t_1b \)

Linked outputs are frozen.

\( t_2 \) Cleaning interval
Canceling the cleaning

A running cleaning cycle is canceled:

- Automatically
  - If the sensor switches to the inactive condition during the cleaning cycle
- Manually
  - By pressing \( \square \)
  - By switching on the maintenance condition

Each time the cleaning cycle is canceled, the valve closes immediately.

If the cleaning cycle is canceled automatically, the outputs linked to the sensor are released immediately.

If the cleaning cycle is canceled manually, the sensor is in the maintenance condition. The linked outputs are only released after the maintenance condition was terminated manually.

The next cleaning cycle will be performed at the time set up.

**Note**
The valve closes in the case of power failure. The cleaning cycle is canceled. As soon as power is available again the next cleaning cycle takes place at the specified time.

### 4.4.2 Sensor-controlled

With the *Sensor-controlled* function, the valve is controlled by a linked sensor. A sensor (or connection module) is required that sends signals to prompt a cleaning cycle, e.g. the MIQ/VIS connection module for UV/VIS sensors.

**Note**
Set the cleaning process in the setting table of the respective sensor.
4.4.3  **Manual control**

**Function**  
With the *Manual control* function you can check the operability of the valve. To do so, close or open the valve manually and, while doing so, check the behavior of the connected cleaning head.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Selection/Values</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve function</td>
<td>Manual control</td>
<td>The selected valve action is carried out with <strong>Save and quit.</strong></td>
</tr>
<tr>
<td>Action</td>
<td>Open Close</td>
<td></td>
</tr>
</tbody>
</table>

**Note**  
The settings for other functions in the *Valve function* menu are retained while the *Manual control* function is carried out.
4.5 Checking the status of the outputs

This function offers a simple overview of the states of all outputs. The open or closed state is displayed for each valve.

With the System 182 XT, you can recall the states of the outputs via the measured value and status display (see system operating manual of the DIQ/S 182 XT).

With the 2020 XT system, the function, Status of output channels, in the menu, Settings/Service/List of all components can be accessed as follows:

1. Call up the measured value display with M.
2. Open the Settings menu with S.
3. Highlight the Service menu item with ▼ and confirm with OK. The Service dialog box opens.
4. Highlight the List of all components menu item with ▼ and confirm with OK. The List of all components dialog box opens.
5. Select the required component (column Model, entry MIQCHV PL) with ▼ and confirm with OK. The Status of output channels window opens.
6. Using M or E, exit the Status of output channels window.
5 Maintenance and cleaning

5.1 Maintenance

The MIQ/CHV PLUS requires no special maintenance.

5.2 Cleaning

**MIQ modules**

Clean modules mounted in the open of gross contamination as necessary. We recommend to clean the worst of the dirt on the module and the area around it each time before opening in order to prevent gross contamination from entering the open enclosure.

To clean the module, wipe the enclosure surfaces with a damp, lint-free cloth. If compressed air is available on site, blow off the worst of the dirt beforehand. Keep the enclosure closed while doing so.
### 6 What to do if ...

<table>
<thead>
<tr>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressed air supply interrupted or too weak</td>
<td>Check the compressed air supply</td>
</tr>
</tbody>
</table>
| Supply voltage not present or too low       | **IQ SENSOR NET:**  
|                                             | – See the chapter, WHAT TO DO IF... in the system manual                |
| Error in triggering                        | – Perform the function check according to section 3.6.  
|                                             | – If the valve does not switch, check the control  
|                                             | – loose clamping connection  
|                                             | – broken control line  
|                                             | – defective relay output  
|                                             | – valve output was not linked with a sensor (see section 4.2)  
|                                             | – incorrect setting of the linked valve output (see chapter 4)          |
7 Technical data

Dimensions

Front view:

Lateral view:

Rear view:

Stack mounting:

Fig. 7-1 Dimension drawing of the MIQ/CHV PLUS (dimensions in mm)
## Technical data MIQ/CHV PLUS

### Mechanical construction

<table>
<thead>
<tr>
<th>Maximum number of modules in a module stack</th>
<th>3 (plus a terminal component in the IQ SENSOR NET)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>- Housing: Polycarbonate with 20 % glass fiber</td>
</tr>
<tr>
<td></td>
<td>- Pressure hose sleeves: POM</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 0.5 kg</td>
</tr>
<tr>
<td>Type of protection</td>
<td>- IP 66</td>
</tr>
<tr>
<td></td>
<td>- In accordance with NEMA 4X MIQ modules are not suitable for conduit connection</td>
</tr>
<tr>
<td></td>
<td>- NEMA 3s</td>
</tr>
</tbody>
</table>

### Ambient conditions

#### Temperature

<table>
<thead>
<tr>
<th>Operation</th>
<th>-20 °C ... + 55 °C (-4 ... 131 °F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>-25 °C ... + 65 °C (-13 ... 149 °F)</td>
</tr>
</tbody>
</table>

#### Relative humidity

<table>
<thead>
<tr>
<th>Yearly average</th>
<th>≤ 90 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dew formation</td>
<td>Possible</td>
</tr>
</tbody>
</table>

### Electrical data

<table>
<thead>
<tr>
<th>Nominal voltage</th>
<th>Max. 24 VDC via a separate power supply module.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQ SENSOR NET:</td>
<td>For details, see chapter TECHNICAL DATA of the IQ SENSOR NET system operating manual</td>
</tr>
<tr>
<td>Suitable power supply modules:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- MIQ/PS</td>
</tr>
<tr>
<td></td>
<td>- MIQ/24V</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Approx. 1 W</td>
</tr>
<tr>
<td>Protective class</td>
<td>III</td>
</tr>
</tbody>
</table>
### Instrument safety

| Applicable norms | – EN 61010-1 |

### EMC product and system characteristics

| EN 61326 | EMC requirements for electrical resources for control technology and laboratory use |
| – Interference immunity according to EN 61326/A1 table A.1 |
| – Resources for industrial areas, intended for indispensable operation |
| – Interference emission limits for resources of class B |

| System lightning protection | Noticeably extended qualitative and quantitative protective characteristics as opposed to EN 61326/A1 table A.1 |
| FCC, class A |

### Terminal connections

| IQ SENSOR NET connections | 2 |
| Additional connectable SENSORNET terminator (terminating resistor) |

**Note:**
If the valve is controlled via an external switch, only one SENSORNET connection can be used due to the limited number of cable glands. SENSORNET connection 1 or 2 can be selected.

| Valve switching contact | 1 |
| Terminal type | Screw-type terminal strip, accessible by opening the lid |
| Terminal ranges | Solid wires: 0.2 ... 4.0 mm²  
AWG 24 ... 12 |
| Flexible wires: 0.2 ... 2.5 mm² |
| Cable feeds | Cable glands M16 x 1.5 on the underside of the module |
### Valve circuits

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching voltage</td>
<td>Approx. 12 V</td>
</tr>
<tr>
<td>Max. switching current</td>
<td>Approx. 70 mA</td>
</tr>
</tbody>
</table>

### Warning

The valve circuit must not supply any unauthorized voltages or currents. It has to be made sure that the circuit at any time meets all requirements of a **Limited circuit or Limited Power** as well as of **SELV** (Safety Extra Low Voltage). These include the following limiting value specifications:

- AC voltage: max. 30 V effective / 42.4 V peak
- DC voltage: max. 60 V
- Current limit: max. 8 A
- Power output limitation: max. 150 VA

### Compressed air

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Required air quality</td>
<td>Dry, dust-free and oil-free</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>Max. (7 \times 10^5) Pa (7 bar) absolute</td>
</tr>
<tr>
<td>Connections</td>
<td>6 mm hose nozzles</td>
</tr>
</tbody>
</table>
8 Indexes

8.1 Explanation of the messages

In this chapter you will find a list with all the message codes and corresponding message texts that may occur in the log book of the IQ SENSOR NET system for the MIQ/CHV PLUS output module.

Note
Information about
- Contents and structure of the log book and
- Structure of the message code

can be found in the LOG BOOK chapter of the IQ SENSOR NET system operating manual.

Note
All message codes of the MIQ/CHV PLUS output module end with the number, "432".

8.1.1 Error messages

<table>
<thead>
<tr>
<th>Message code</th>
<th>Message text</th>
</tr>
</thead>
</table>
| EI2432       | * Operational voltage too low, no operation possible  
               * Check installation and cable lengths, Follow installation instructions  
               * Power unit(s) overloaded, add power unit(s)  
               * Defective components, replace components  
               * Defective components, replace components |

8.1.2 Informative messages

The MIQ/CHV PLUS output module does not send any informative messages.
9 Contact Information

9.1 Ordering & Technical Support

Telephone:   (800) 897-4151  
             (937) 767-7241  
             Monday through Friday, 8:00 AM to 5:00 PM ET

Fax:         (937) 767-1058

Email:       environmental@ysi.com

Mail:        YSI Incorporated  
             1725 Brannum Lane  
             Yellow Springs, OH 45387  
             USA

Internet:    www.ysi.com

When placing an order please have the following information available:

- YSI account number (if available)  
- Name and Phone Number
- Model number or brief description  
- Billing and shipping address
- Quantity  
- Purchase Order or Credit Card

9.2 Service Information

YSI has authorized service centers throughout the United States and Internationally. For the nearest service center information, please visit www.ysi.com and click ‘Support’ or contact YSI Technical Support directly at 800-897-4151.

When returning a product for service, include the Product Return form with cleaning certification. The form must be completely filled out for an YSI Service Center to accept the instrument for service. The Product Return form may be downloaded at www.ysi.com and clicking on the ‘Support’ tab.
## 10 Accessories and options

<table>
<thead>
<tr>
<th>Description</th>
<th>Model</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning head for online sensors with 40 mm diameter</td>
<td>CH</td>
<td>900 107Y</td>
</tr>
<tr>
<td>Tubing set, comprising:</td>
<td>CH/Epack</td>
<td>900 111Y</td>
</tr>
<tr>
<td>- 15 m compressed-air hose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 1 quick disconnect coupler, complete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 2 hose clips</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Teflon tape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-range power supply for 100-240 VAC nominal input voltage</td>
<td>MIQ/PS</td>
<td>480 004Y</td>
</tr>
<tr>
<td>Power supply for 24 V AC/DC nominal input voltage</td>
<td>MIQ/24V</td>
<td>480 006Y</td>
</tr>
<tr>
<td>IQ SENSOR NET cable - please specify required length in m when ordering</td>
<td>SNCIQ</td>
<td>480 046Y</td>
</tr>
<tr>
<td>SNCIQ/UG</td>
<td></td>
<td>480 047Y</td>
</tr>
<tr>
<td>Sun shield for a unit of up to three stacked MIQ modules</td>
<td>SSH/IQ</td>
<td>109 295Y</td>
</tr>
<tr>
<td>Sun shield for a unit of up to two stacked MIQ modules</td>
<td>SD/K 170</td>
<td>109 284Y</td>
</tr>
<tr>
<td>Mounting kit for fixing the SD/K 170 sun shield on horizontal or vertical</td>
<td>MR/SD 170</td>
<td>109 286Y</td>
</tr>
<tr>
<td>pipes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kit for wall mounting of a MIQ module</td>
<td>WMS/IQ</td>
<td>480 052Y</td>
</tr>
<tr>
<td>Set for panel mounting of MIQ modules; Panel aperture 138 x 138 mm</td>
<td>PMS/IQ</td>
<td>480 048Y</td>
</tr>
<tr>
<td>according to DIN 43700 or IEC 473</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set for mounting of MIQ modules on a 35 mm top hat rail according to</td>
<td>THS/IQ</td>
<td>480 050Y</td>
</tr>
<tr>
<td>EN 50022</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>