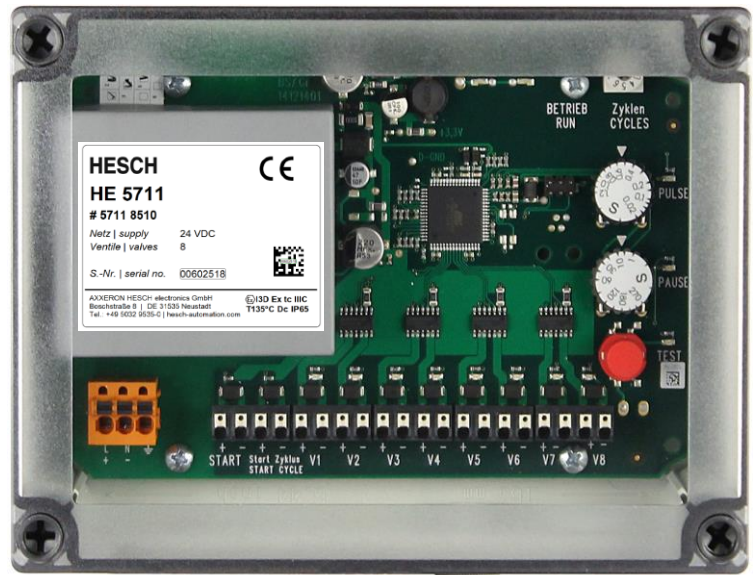


HE 5710 / HE 5711

Solenoid valve controller



Operating instructions

(Translation of Original German version)

Imprint

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Document history

Version	Date	Description	Author
1.0	12/2013	First version	De
1.1	04/2014	Chapter 3.1, 3.2, 3.3, 5.2: Changed value for wide-range power supply (100 – 240 VAC) chapter 7: Declaration of conformity added	De
1.2	03/2017	Smaller corrections, device identification updated, declaration of conformity removed	De
1.3	12/2019	Bilingual name plates added	Bg
1.4	03/2023	Validity of operating instructions for ATEX and Non-ATEX devices	Bg

1. Legal Provisions

Manufacturer

AXXERON HESCH electronics GmbH, Boschstraße 8, 31535 NEUSTADT, GERMANY

Intended use

- The solenoid valve controller HE 5710 / HE 5711 serves for cleaning industrial filtration plants.
- The device can be operated within the operating and environmental conditions approved in this operating instructions without impairing its safety.
- The manufacturer is not liable for improper use and any resulting personal injury or material damage; the risk is borne solely by the user. Failure to comply with the above criteria for intended use will result in expiry of the warranty and liability for the device.



Note!

The devices are available **with ATEX approval for use in EX zone 22 as well as without ATEX approval**. If you have ordered an ATEX-approved device, you must necessarily observe the safety instructions for explosion prevention, the indication on the name plate as well as the special regulations in *chapter 2.4 Device Identification*.

Personnel qualification

All work on the device may only be carried out by qualified electricians with sufficient knowledge in the field of electrical engineering.

Device Safety

The device has been constructed and tested in accordance with VDE 0411 / EN 61010-1 and has left the factory in perfect safety condition. To maintain this condition and ensure safe operation, the user must follow all instructions and warnings in these operating instructions.

Declaration of conformity

The valid declaration of conformity is available in the download centre of our website <https://www.hesch-automation.com/en/support/download-center/>. Click on the tab **Declarations of Conformity** to select your device.

2. Safety Information

2.1 Symbols and Basic Safety Instructions

This chapter contains important safety regulations and notes. To protect against personal injury and material damage, it is necessary to read this chapter carefully before working with the device.

Symbols used

The following symbols are used in this manual. All safety instructions have a uniform structure.



Personal injury warning!

The severity of the danger is indicated by the respective signal word.



Explosive region warning sign!



High voltage warning!



Warning of material damage caused by electrostatic charge!



Property Damage Warning!



Note!

Identifies possible malfunctions and indicates optimum operating conditions.

2.2 Signal words

DANGER!

Indicates an imminently hazardous *high* risk situation, which, if not avoided, will result in death or serious injury.

WARNING!

Indicates a potentially hazardous medium risk situation, which, if not avoided, could result in death or serious injury.

CAUTION!

Indicates a hazardous low risk situation, which, if not avoided, could result in minor or moderate injury.

2.3 Safety in the individual operating phases

When installing the control unit and during operation, the following safety instructions must be observed.



Danger of Electrocution!

Before working on the device, switch off all power supplies used. The electrical cables must be laid according to the respective national regulations (in Germany VDE 0100). The measuring cables must be laid separately from the power lines. The connection between the connector for the functional earth (in the respective equipment carrier) and a protective earth must be established.



Danger of Electrocution!

Any interruption of the protective earth in the equipment carrier can result in the device becoming a hazard. Intentional interruptions are not permitted. If there is a suspicion that it is no longer possible to operate the device safely, it must be shut off and secured against being unintentionally switched on.



Danger of Electrocution!

Do not open the device when it is connected to the voltage! When opening the devices or removing covers and parts, live parts may be exposed. Connection points can also be live!



Attention!

The device must never be put into operation even if damage is recognisable.



Attention!

During installation, commissioning, maintenance and troubleshooting, observe accident prevention regulations for your system, e.g. DGUV Regulation 3 "Electrical installations and equipment".



Attention!

Clean dirty contacts with oil-free compressed air or ethyl alcohol and a lint-free cloth.



Warning of material damage caused by electrostatic charge!

Observe the safety measures according to BS EN 61340-51/-3 to avoid electrostatic discharge!



Electrical connection!

The cable shielding belongs to the measurement earth. The effects of interference fields can be prevented through use of twisted and screened measuring lines. The respective connection diagrams / connection designs for the devices apply

**Explosion Prevention! (for ATEX approved devices only!)**

This device (the version with the Makrolon housing) is suitable for operation in explosion Zone 22 with the lid closed (where an explosive atmosphere may arise due to electrically conductive dusts). Prior to opening the device, one must ensure that there are no explosive ambient conditions, such as dust formation. The special regulations governing operation in an Ex-area must be observed.

**Fuse failure!**

First determine the causes for the failure and remove them. Only use fuses which have the same specification as the original type as a replacement. Repaired fuses or short circuiting are not permissible.

**Troubleshooting!**

At the beginning of troubleshooting, all possible sources of faults on additional devices or supply lines (measuring lines, wiring, downstream devices) should be taken into consideration. If the fault is not found after checking these points, we recommend sending the device to the supplier.

**Decommissioning!**

Switch off the power supply on all poles if the device is to be decommissioned. Secure the device against being unintentionally switched on! If the device is linked to other devices and/or equipment, consider the impacts and take appropriate precautions before switching it off.

2.4 Device Identification



Note!

The devices are available **with ATEX approval for use in EX zone 22 as well as without ATEX approval**. If you have ordered an ATEX-approved device, you must necessarily observe the safety instructions for explosion prevention, the indication on the name plate as well as the special regulations in *chapter 2.4 Device Identification*.

The devices are marked as follows:

With ATEX:	Without ATEX:
   II3D Ex tc IIIC T135°C Dc IP65	 

II3D	Device category:	Use in Zone 22 for dust during normal operation
Ex	Designates electrical equipment. Standards of the EN 60079-Off. series have been applied.	
tc	Type of ignition protection:	Protection by housing
IIIC	Explosion group:	conductive dusts
T135°C	Temperature class:	maximum permissible surface temperature
Dc	Device protection level:	Use in Zone 22 for dust
IP65	Protection type:	dust-tight and protected against water jets

The following special regulations must be observed:

- Connect the cable firmly to the glands.
- Housing bores not required must be closed professionally with sealing bolts.
- The ATEX certification only maintains its validity if the installation is carried out correctly by a professional under the safeguarding of the protection class specified on the marking.
- Cleaning of the housing is only permitted with moist cleaning materials to avoid static charging.
- The device must be cleaned regularly to prevent increased dust generation on the device.
- Operation under voltage in EX zone 22 only in closed state.
- Before closing, ensure that the device housing is free of dust.

3. Device Description

3.1 Overview

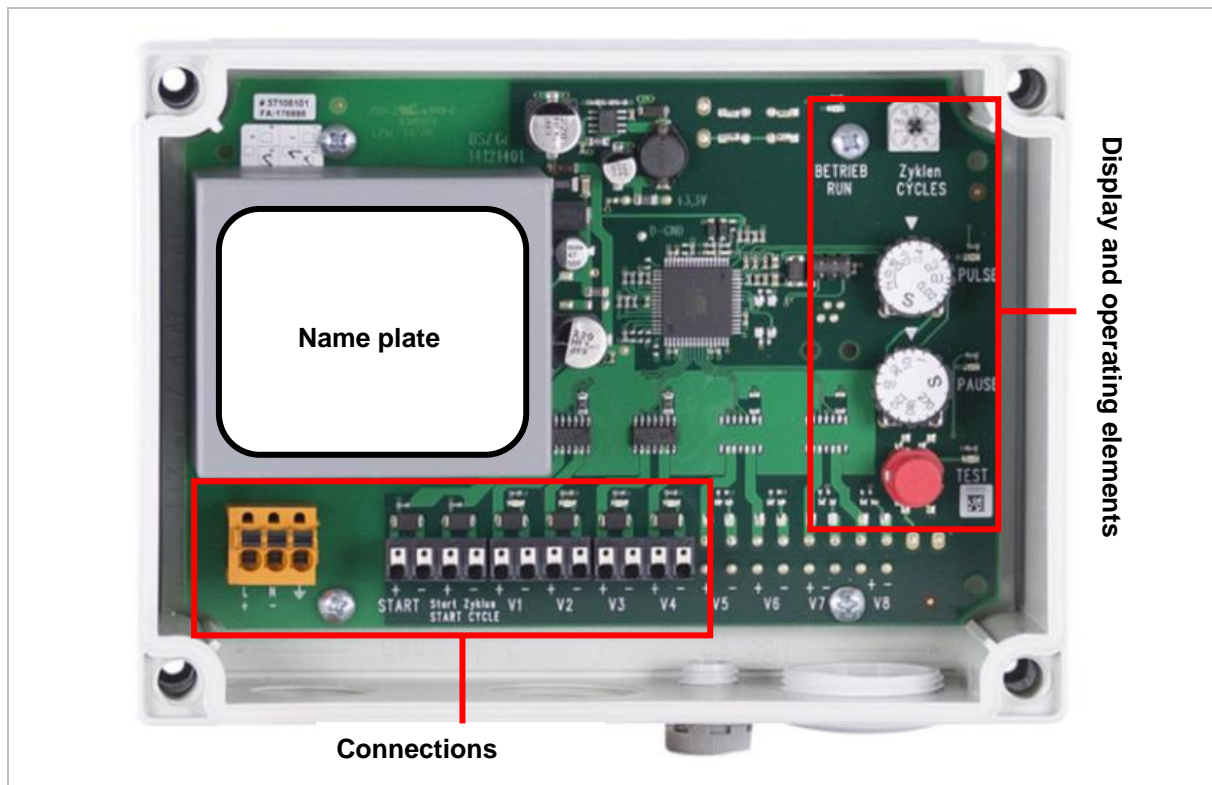


Figure 1. Overview (exemplary on HE 5710)



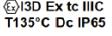




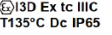


Name plate <u>for ATEX approved devices:</u>	Name plate for devices <u>without ATEX approval:</u>
<p>HESCH </p> <p>HE 5710</p> <p># 5710 0001</p> <p>Netz supply 100...240 VAC</p> <p>Ventile valves 4</p> <p>S.-Nr. serial no. 00602495</p> <p>AXXERON HESCH electronics GmbH Boschstraße 8 DE 31535 Neustadt Tel.: +49 5032 9535-0 hesch-automation.com</p> <p></p> <p> I3D Ex tc IIIC T135°C Dc IP65</p>	<p>HESCH </p> <p>HE 5710</p> <p># 5710 0499 0200</p> <p>Netz supply 100...240 VAC</p> <p>Ventile valves 4</p> <p>S.-Nr. serial no. 00607362</p> <p>AXXERON HESCH electronics GmbH Boschstraße 8 DE 31535 Neustadt Tel.: +49 5032 9535-0 hesch-automation.com</p> <p></p>
<p>HESCH </p> <p>HE 5711</p> <p># 5711 8510</p> <p>Netz supply 24 VDC</p> <p>Ventile valves 8</p> <p>S.-Nr. serial no. 00602518</p> <p>AXXERON HESCH electronics GmbH Boschstraße 8 DE 31535 Neustadt Tel.: +49 5032 9535-0 hesch-automation.com</p> <p></p> <p> I3D Ex tc IIIC T135°C Dc IP65</p>	<p>HESCH </p> <p>HE 5711</p> <p># 5711 0899 1100</p> <p>Netz supply 24 VDC</p> <p>Ventile valves 8</p> <p>S.-Nr. serial no. 00607233</p> <p>AXXERON HESCH electronics GmbH Boschstraße 8 DE 31535 Neustadt Tel.: +49 5032 9535-0 hesch-automation.com</p> <p></p>

Figure 2. Name plates

3.2 Display and Operating Elements

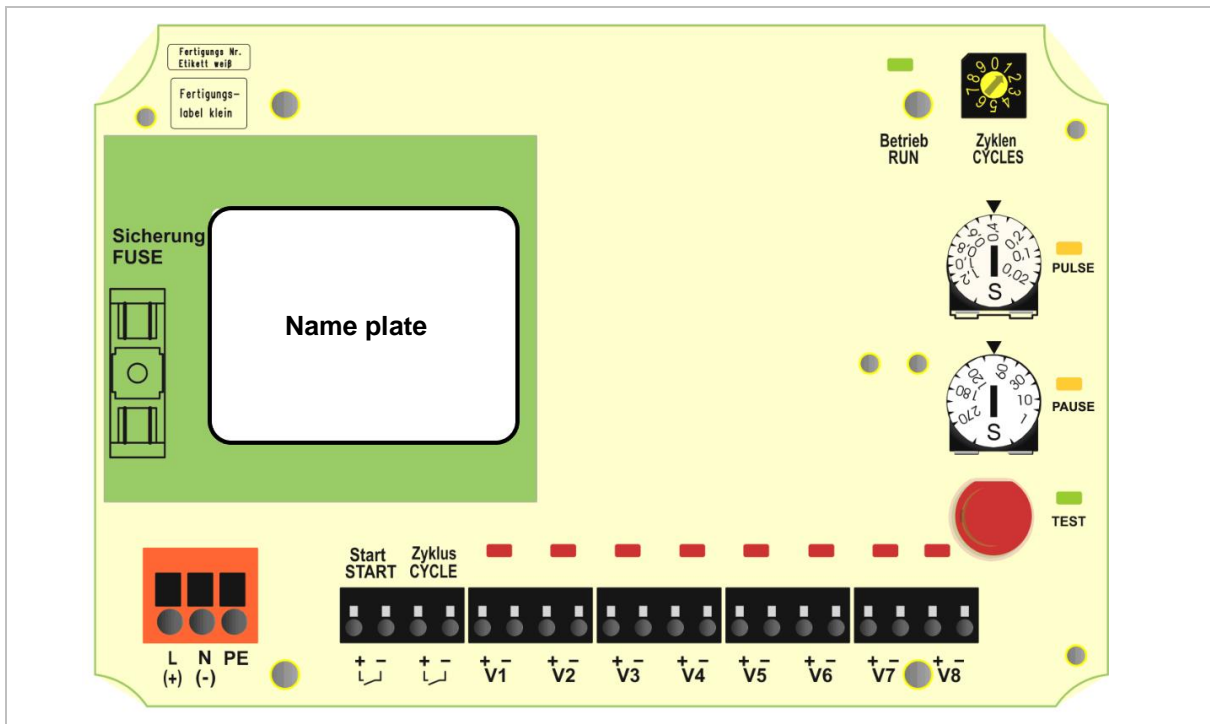
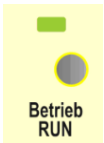

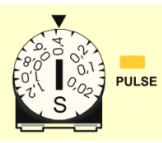




Figure 3. Display and Operating Elements

Symbols	Meaning
 <p>Betrieb RUN</p>	<ul style="list-style-type: none"> • RUN • LED green • Lights up, if the operating voltage is applied and the processor is active
 <p>Zyklen CYCLES</p>	<ul style="list-style-type: none"> • CYCLES • Rotary coding switch • Determines the number of cycles (1...9). The rotary coding switch setting 0, deactivates the cyclic cleaning.
 <p>PULSE</p>	<ul style="list-style-type: none"> • PULSE • LED yellow • Lights up during the actuation time (pulse) of the valves • Potentiometer for pulse time setting between 0.02...1.2 s
 <p>PAUSE</p>	<ul style="list-style-type: none"> • PAUSE • LED yellow • Lights up from pause to actuation (pulse) of the next valve. Even during longer pause times, the state of the controller is recognisable. • Potentiometer for pause times from 1...270 s
 <p>TEST</p>	<ul style="list-style-type: none"> • Button TEST • Pressing the button once, starts pulse and pause of the next valve. • Pressing the button one more time, cancels the pause of the active valve or starts the next valve. • Pressing the button for more than 2 s, starts a cleaning for the set cycle. If the number of cycles is 0, the cleaning continues as long as the button TEST is pressed.

3.3 Technical Data

Technical Data	
Intended use:	-solenoid valve controller for cleaning industrial filtration plants
Supply voltage:	-100...240 V AC, 50...60 Hz -24 V DC \pm 10% (option) (safety extra-low voltage SELV)
Power consumption:	30 VA, self-consumption about 3 kW
LED:	- HE 5710: 4 for valve control, red - HE 5711: 8 for valve control, red -RUN, green -PULSE, yellow -TEST, green
Inputs:	-START: start cleaning (contact closed) -START CYCLE: cycle cleaning (trigger signal), switchable with a potential-free contact or semiconductor switch, "Active Low"
Valve outputs:	- HE 5710: 1...4 - HE 5711: 1...8
Valve voltage:	24 V DC \pm 10%
Valve current:	-1 A for a pulse time \leq 1s and a pause time \geq the pulse time -The outputs are short-circuit-proof
Fuse:	Glass fuse 5 x 20 mm, 2 A, slow-bow
Electrical connections:	Vertical cage spring release terminals
Operating temperature:	-20°C...+50°C -20°C...+40°C in EX zone
Designs:	- Assembly on standard rail support: 165 mm x 111 mm (W x H) -dust-proof Makrolon housing (IP65) with transparent cover, with a M25 x 1.5 thread and two M32 x 1.5 threads for metric screw connections -If necessary, openings should be closed with screw plugs, to make the device dust-proof (IP65) -An M32 screw plug is in the scope of delivery of HE 5710 Housing dimensions: 180 mm x 130 mm x 78 mm (W x H x D)
Connection set (option):	-1 x M25 screwed cable gland -2 x M32 screwed cable gland -Multiple sealing inserts and locking bolts -Height of the cable gland: 40 mm

Subject to technical changes.

4. Installation



Note!

If you want to drill the device to the wall, *Figure 4* can be used as a drilling template.

The ambient temperature at the installation point must not exceed the permissible temperature for nominal use specified in the technical data.



Note!

Devices **with ATEX approval** may be installed in **EX zone 22**. You must necessarily observe the safety instructions for explosion prevention, the indications on the name plate as well as the special regulations in 2.4 *Device Identification*.

4.1 Dimensions

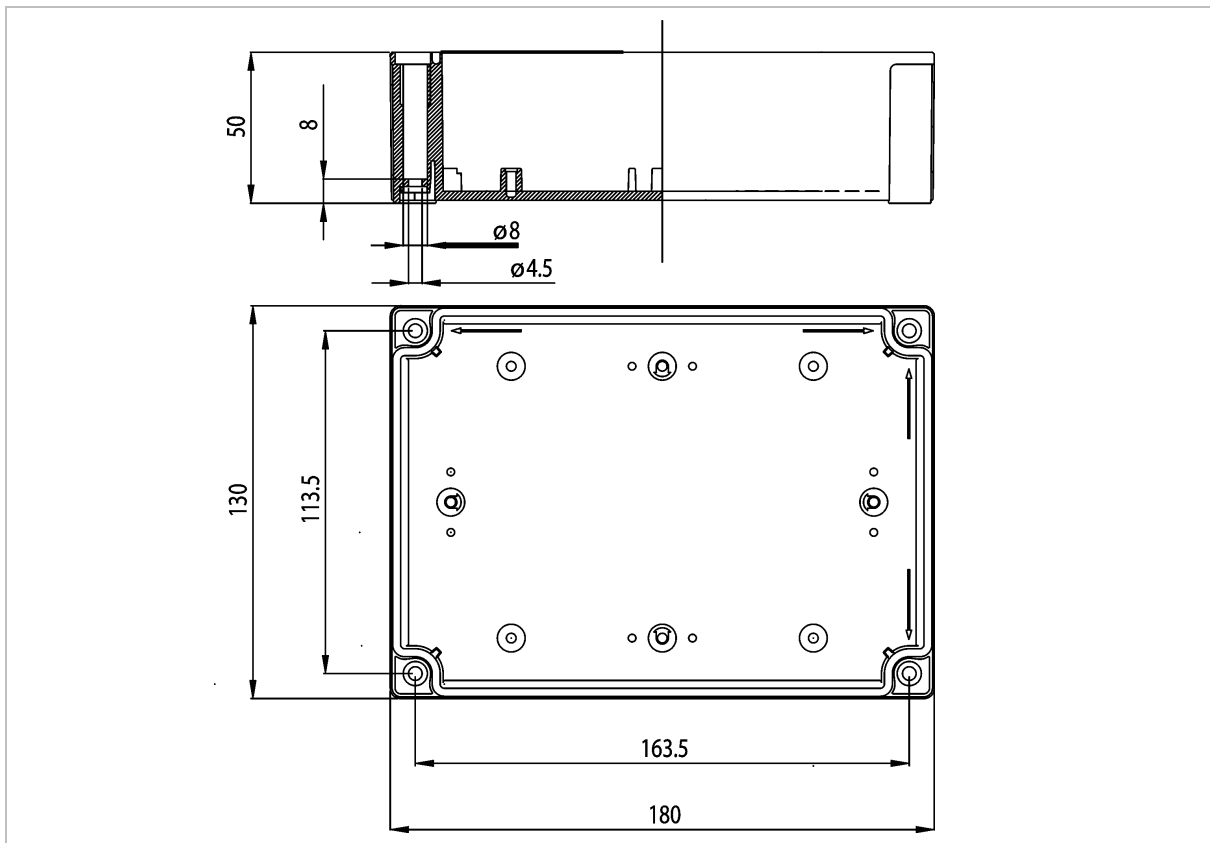


Figure 4. Dimensions

Scope of Delivery

- HE 5710 / HE 5711
- Operating instructions



Note!

Upon receipt, check the delivery for completeness and for visible defects. In case of complaint, contact your responsible representative of AXXERON HESCH electronics GmbH immediately.

5. Electrical Commissioning

Before switching on the device, observe the following points:

- Connect the cables firmly to the glands.
- The voltage supply must correspond to the indication on the name plate.
- The device may be operated with closed cover only.
- The temperature limitations specified for the use of the device must be complied with before and during operation.
- The protective ground connection in the appropriate device carrier has to be conductively connected to the protective ground.

5.1 Safety Information



Danger of Electrocution!

Electrical installation must only be carried out when the power is disconnected.



Warning of material damage caused by electrostatic charge!

Observe the safety measures according to DIN EN 61340-51/-3 to avoid electrostatic discharge!



Note!

Work on the electronic parts may only be carried out by qualified personnel.

5.2 Supply voltage

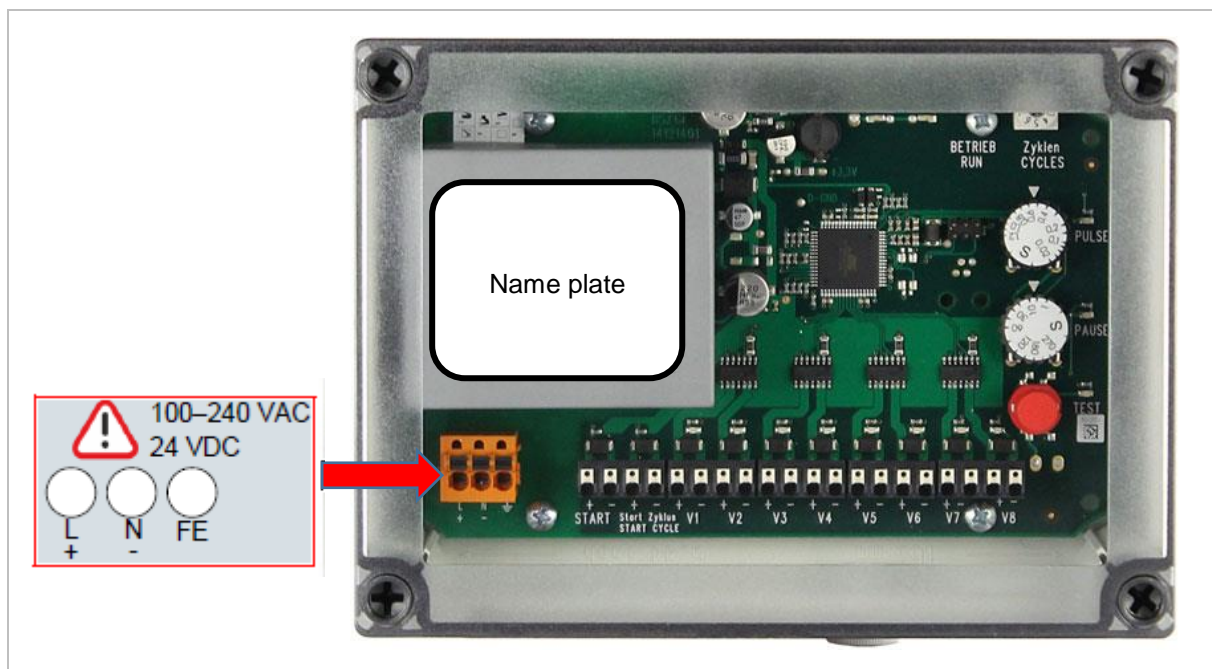


Figure 5. *Supply voltage*

1. Loosen the screws of the housing cover and open the cover.
2. Look at the indication of the correct supply voltage on the name plate (e.g. 100...240 V AC or 24 V DC mains voltage).
3. Connect PE conductors.

5.3 Connection diagram

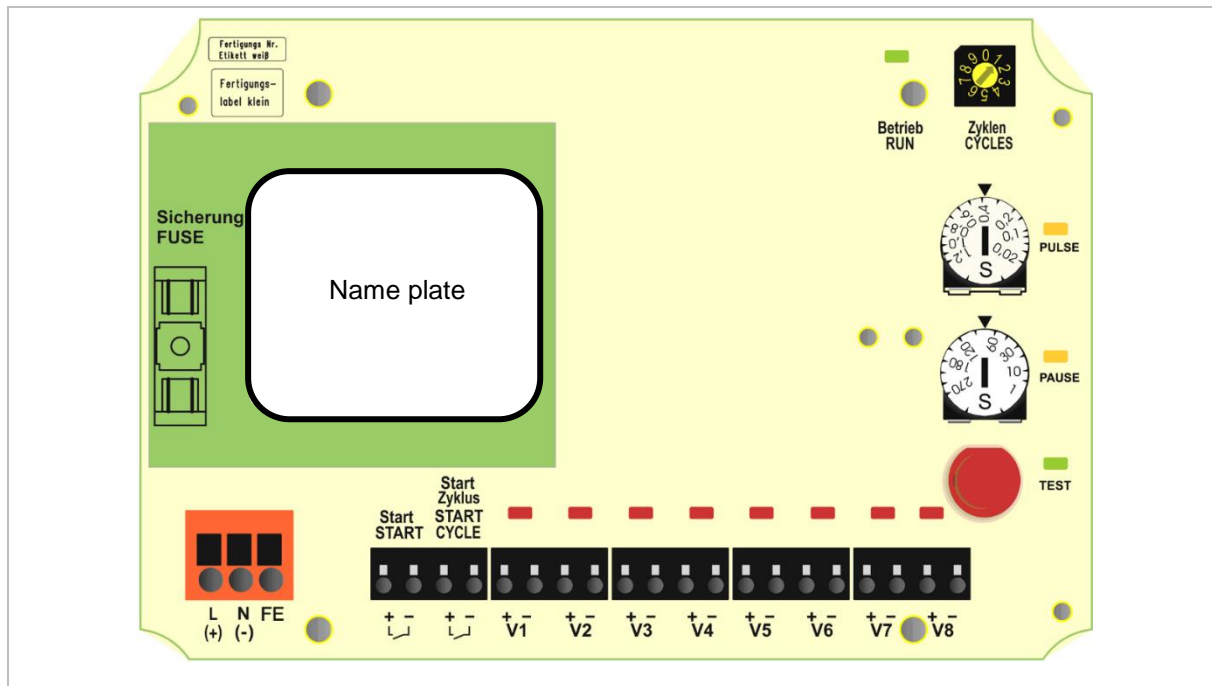


Figure 6. Connection diagram

Terminal	Meaning
L (+)	Supply voltage L, 100...240 V AC or (+) 24 V DC
N (-)	Supply voltage L, 100...240 V AC or (-) 24 V DC
PE	Protective earth
+ START [Start]	Input cleaning start (+), Active Low
- START [Start]	Input cleaning start (GND)
+ START CYCLE	Input cyclic cleaning (+), Active Low
- START CYCLE	Input cyclic cleaning (GND)
+V1	Output of valve 1 (+24 V DC)
-V1	Output of valve 1 (GND)
+V2	Output of valve 2 (+24 V DC)
-V2	Output of valve 2 (GND)
+V3	Output of valve 3 (+24 V DC)
-V3	Output of valve 3 (GND)
+V4	Output of valve 4 (+24 V DC)
-V4	Output of valve 4 (GND)
+V5	Output of valve 5 (+24 V DC)
-V5	Output of valve 5 (GND)
+V6	Output of valve 6 (+24 V DC)
-V6	Output of valve 6 (GND)
+V7	Output of valve 7 (+24 V DC)
-V7	Output of valve 7 (GND)
+V8	Output of valve 8 (+24 V DC)
-V8	Output of valve 8 (GND)

**Note!**

The terminals V5 (+ and -) to V8 (+ and -) **for HE 5711 only!**

5.4 Inputs

The solenoid valve controller has two inputs: START and START CYCLE. The inputs are internally supplied with +24 V DC and are active when they are switched to (-) with a potential-free contact.

5.5 Valves

- **Connection:**
 - HE 5710 on terminals V1 (+ and -) to V4 (+ and -)
 - HE 5711 on terminals V1 (+ and -) to V8 (+ and -)
- Valve type: 24 V DC, max. 1 A
- Common potential: -
- Switched output: +
- The outputs are short-circuit-proof.

5.6 Commands

Permanent operation: connect the terminals START (+ and -).

Cycle operation: connect the terminals START CYCLE (+ and -) (trigger signal).

6. Setting

Number of valves

The number of valves is determined automatically by the controller. Detected valves are indicated by lit LEDs.

Number of full cleaning cycles

Set the number of cycles (1...9) via the rotary coding switch CYCLES. If the rotary coding switch is on 0, the cyclic cleaning is deactivated. The cleaning process for the set cycles is started via the trigger signal at the terminals START CYCLE (+ and -).

Pulse time of valves

Setting via the potentiometer PULSE between 0.02 and 1.2 seconds.

Pause time of valves

Setting via the potentiometer PAUSE between 1 and 270 seconds.

7. Maintenance and Service

Maintenance, Repair

The device must be cleaned regularly to prevent an increased generation of dust on the device.

Disposal

Dispatch metals and plastics for recycling. Electrical and electronic components must be collected separately and disposed of properly. Dispose of equipped circuit boards properly.

Service

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