



## Kyocera C100 Neutralisation unit

### **Instruction manual | Status - November 2023**

SOFTWARE VERSION 3

#### IMPRINT

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Our product specifications are based on extensive technical development and the results from stringent tests. We have many years' experience in different application areas which provides additional security with regard to the durability of FRIDURIT environmental equipment. However, it is the responsibility of the user to check our specifications and recommendations and conduct their own tests to confirm that they are suitable for their intended purpose.

The statutory warranty provisions apply. We also refer to our General Terms and Conditions of Supply and Payment.

We reserve the right to make technical changes.

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## 1. PREFACE

With the Kyocera neutralisation unit, you are making an active contribution to protecting the environment. Cleaning wastewater contaminated with chemicals directly at the point of origin protects the laboratory and building structure and minimises risks. This is achieved with a minimum noise level and the smallest possible installation space.

The Kyocera neutralisation unit helps you to comply with the limit values of municipal waste disposal companies and their wastewater regulations.

The Kyocera neutralisation unit is characterised by its sophisticated technology, high-quality components from leading manufacturers, simple and reliable construction and maintenance-friendly design.

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## 2. NOTES ON USING THE INSTRUCTION MANUAL

### About this instruction manual

This instruction manual contains both operating and assembly instructions, whereby the operating instructions are given first because they are expected to be used more frequently. Users of the Kyocera neutralisation unit should read the instruction manual...:

- Read carefully before use
- Store during the service life of the device
- Make it accessible to staff at all times

If you have any further questions, please do not hesitate to contact Kyocera Environmental Equipment (see cover page for contact details).

### Symbols and markings





The content of the instructions is divided into four text elements: Pure information text, procedural instructions, notes and safety instructions. You can recognise the corresponding text elements by the following markings:

**Information text:** Continuous text without mark-up



Notes: Blue information symbol with textual description.

**Safety instructions:** Yellow Hazard symbols with textual description are highlighted in grey.

Symbol	Signal word	Meaning
	<b>Warning!</b>	Indicates a potentially hazardous situation caused by electrical energy. Failure to observe the warning may result in serious damage to health and/or property.
	<b>Warning!</b>	Refers to a potentially hazardous situation caused by aggressive chemicals. Failure to observe the warning may result in serious damage to health and/or property.
	<b>Caution!</b>	Indicates a potentially hazardous situation. If not avoided, minor injuries and damage to property can result.
	<b>Attention!</b>	Indicates a potentially harmful situation. If it is not avoided, the device or objects in the vicinity may be damaged.

### 3. INTENDED USE

The Kyocera neutralisation unit should only be operated in the intended manner.

It purifies acidic and alkaline wastewater directly at the point of origin in chemical laboratories and similar applications or as a central neutralisation unit in conjunction with storage tanks and other accessories.

#### Limit data:

Media temperature at the inlet connection: +10°C to +40°C

Ambient temperature: +10°C to +35°C

#### Non-intended use:

The Kyocera neutralisation unit is not suitable for treating the following substances:

- Hydrofluoric acid HF (concentration greater than 1 g/l)
- Heavy metals
- Oils and fats
- Sanitary wastewater
- Protein
- Starch
- Emulsions and dispersions
- Paints and varnishes
- Sticky and fibrous substances
- Solids

The following events may occur as a result of non-intended use:

- Defect in the pH electrode
- Failure in the pH measurement
- Pumping out non-neutralised wastewater
- Defect in the mix-pump unit

Service work and damage to the unit caused by the aforementioned substances are excluded from the warranty.

Please discuss your specific application with the manufacturer (see cover sheet for contact details).

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## 4. GENERAL SAFETY INSTRUCTIONS

This chapter describes the general safety instructions. Please read these carefully. They provide information on how to avoid damage to property or personal injury. These and other safety instructions can also be found at the relevant points in the text.

### Product safety

KYOCERA Fineceramics Europe GmbH guarantees a high quality standard of the manufactured products through a certified quality management system (EN ISO 9001). All devices are subjected to a final inspection before leaving the factory.

The Kyocera neutralisation unit may only be used if it is in perfect technical condition and in accordance with its intended use, in a safe and hazard-conscious manner and in compliance with the instruction manual.

Faults and defects in the unit that could impair safety must be rectified immediately.

Only original spare parts from the manufacturer may be used for repairs.

The applicable national, regional and company regulations must be observed, particularly with regard to explosion protection, safety and accident prevention.

### General safety instructions



#### Attention!

**The unit must be installed by trained specialists.** You can obtain the addresses of experienced installers and service partners from the supplier of the unit.



#### Attention!

**Do not feed:** Please note that the unit is not suitable for treating hydrofluoric acid HF (concentration greater than 1 g/l), heavy metals, sanitary wastewater, protein, starch, oils, fats, dispersions, paints, varnishes, sludge, sticky and fibrous substances and solid impurities (see checklist).



#### Attention!

**Observe the company accident prevention regulations!** If in doubt, please contact the responsible safety officer.

**Attention!**

**Risk of contamination!** Despite careful manufacturing and material selection, leaks may occur in the unit. In this case, appropriate protective measures (safety tub, floor drain, etc.) should be provided.

**Attention!**

**Ensure adequate ventilation!** Ensure that the unit location is adequately ventilated, especially when filling the chemical tanks.

## Assembly and installation

**Attention!**

**Risk of damage to the device!** Assembly and maintenance of the device may only be carried out by qualified personnel. Damage caused by improper work will invalidate the warranty. **The applicable norms and standards must be observed for all assembly and maintenance work.**

**Danger!**

**Electrical energy!** Risk of personal injury due to electrical energy. Risk of damage to the device. The electrical connection of the Kyocera neutralisation unit should be carried out by a qualified electrician. Damage caused by improper connection voids the warranty.

**Warning!**

**Corrosive chemicals!** Risk of chemical burns and damage due to leaks! The overflow shall not be closed or restricted by a waste trap or a stop valve. Do not damage the seals during assembly.

## Operation

**Warning!**

**Corrosive chemicals!** Risk of chemical burns or damage to the device! Do not remove any covers from the device during operation!

## Maintenance

**Danger!**

**Electrical energy!** Risk of personal injury due to electrical energy! When working on the device, set the repair switch to "0" to disconnect the control system from the power supply.

**Warning!**

**Corrosive chemicals!** Risk of chemical burns due to contact with the neutralisation chemicals! Wear protective clothing during maintenance work. Please also observe the company safety regulations. Avoid contact with the wastewater in the unit and in the pipework!

## 5. SYSTEM PROPERTIES

### Material

All wetted parts of the Kyocera neutralisation unit are made of chemically resistant plastics. The reaction tank, the chemical tanks and the wetted parts of the mix-pump unit are made of polypropylene (PP). Other construction materials include polytetrafluoroethylene (PTFE), polyvinyl chloride (PVC), fluoropolymer (FPM) and ethylene propylene diene monomer rubber (EPDM).

### Control system

The control and monitoring elements required for operation are housed in a compact control housing that has been integrated into the housing contours. The use of a modern electronic control system ensures that the Kyocera neutralisation unit functions reliably. Numerous interfaces enable simple and flexible connection of the control system to other components and on-site equipment.

The optionally available analogue output (receptacle X4) must be ordered separately. Otherwise, the corresponding receptacle is fitted but not wired.

### Technical data

Capacity:	Reaction chamber: approx. 100 litres
	Acid/alkali tank: approx. 25 litres
Neutralisation performance:	max. 200 l/h with average pollutant content in the wastewater (acid or alkali)
pH measurement:	High-resistance voltage measurement, measuring range 0-14 pH, floating, resolution 0.1 pH
Alarm contact:	Potential-free changeover contact, 250 V AC, 2 A, 200 W
Operator guidance:	Membrane keypad with backlit graphic display 128x64 pixels and 4 operating buttons
Interfaces:	Optional: Analogue interface 0/4 - 20 mA, serial interface RS-232
Temperature range:	Ambient/media temperature: +5 - +35 °C

### Accessories



Note: We also stock suitable accessories for your individual application, such as storage tanks and neutralisation units for chemically contaminated wastewater, paper and screen loggers, a complete pH follow-up check, etc. If required, please contact our application technology department.

The following components can be supplied for customised applications:

- DN40 inlet installation set made of PVC-U, consisting of manual ball valve, soil trap and 230V 50Hz motor ball valve
- Kyocera storage containers with capacities from 300 to 2000 litres, each with electronic visual and audible alarm for maximum fill level
- Independent monitoring device for the pH value in the wastewater downstream of the neutralisation unit with recording by a paperless logger

- Chemical-resistant pump unit with plastic feed pump and electrical control system

All components are coordinated and optimised for easy installation. Please discuss your individual application with the Kyocera environmental equipment staff.

### Scope of supply

The Kyocera neutralisation unit is supplied as a complete and ready-to-use unit. The following parts are included in the scope of supply:

Kyocera C100 neutralisation unit with integrated chemical tanks, mix-pump unit and integrated control system, pre-assembled ready for operation.

Accessory pack with accessories (mating connector for plug-in connectors, fastening parts).

Technical documentation (operating and assembly instructions for neutralisation unit and accessories, circuit diagrams, etc.).

## 6. PRODUCT DESCRIPTION

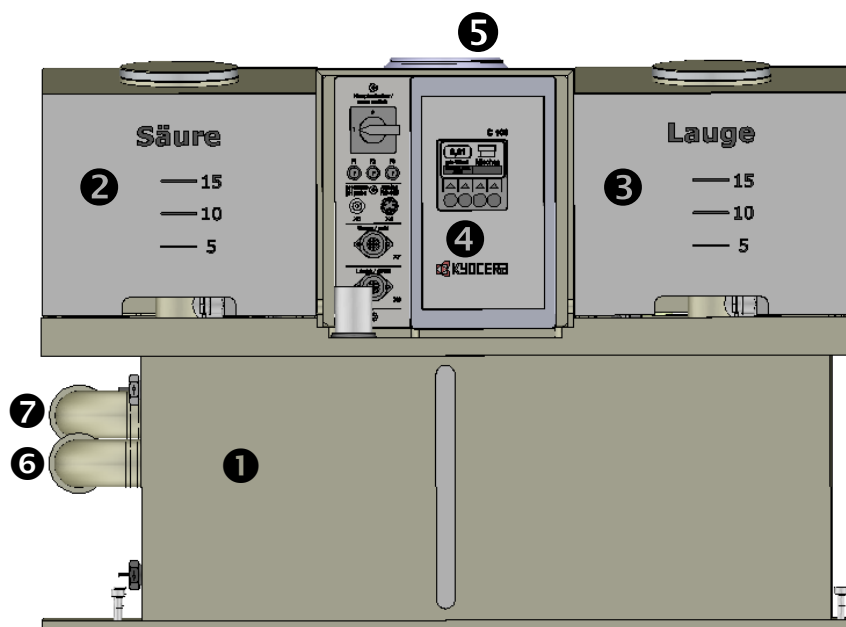
### Function

The Kyocera C100 neutralisation unit is used for the simple and reliable neutralisation of laboratory wastewater directly at the point of origin.

It can be operated in conjunction with a Kyocera fume scrubber to neutralise the scrubbing liquid or as a free-standing unit. Various additional components, such as a storage tank, chemical-resistant pump unit, inlet installation set, etc., enable customised adaptation to different tasks.

### Components

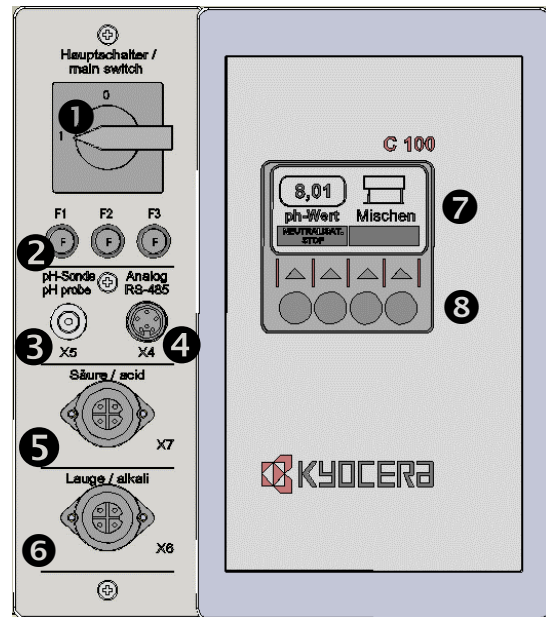
1. Reaction vessel
2. Chemical container for acid
3. Chemical container for alkali
4. Control system with pH meter, keypad and graphic display
5. Mix-pump system (behind the control system)
6. Inlet connection
7. Overflow connection



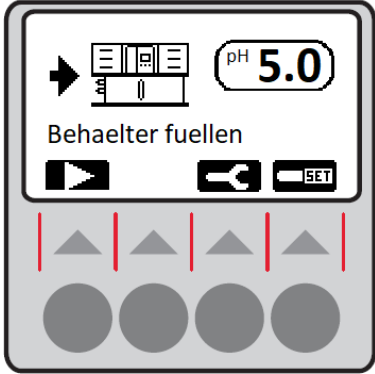






## Control elements

1. Repair switch for disconnecting the unit from the power supply for servicing
2. Miniature fuses F1 to F3 (see chapter Troubleshooting)
3. Input receptacle for pH electrode connection cable
4. Plug-in connection for analogue and digital interface (option 1)
5. Receptacle for acid solenoid valve plug (orange cable colour)
6. Receptacle for alkali solenoid valve plug (grey cable colour)
7. Display for unit status and operator guidance
8. Keypad for operation

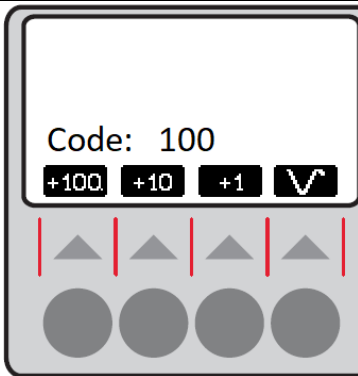
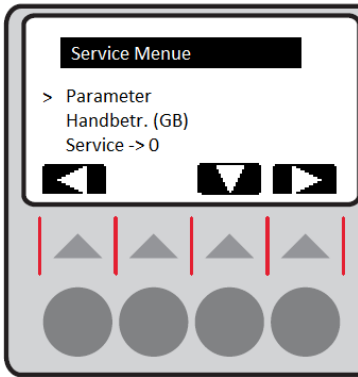
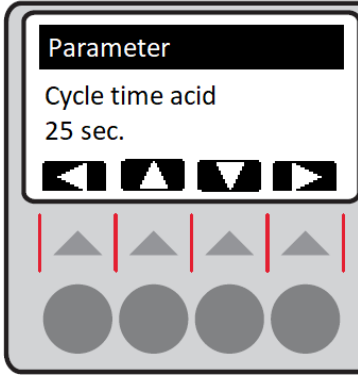




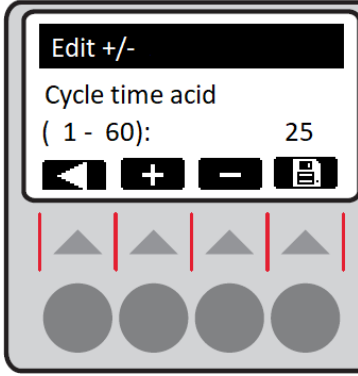






## LCD display with keypad in automatic mode

 <p>The image shows the LCD display and keypad. The display shows a pH value of 5.0 and the text 'Behälter füllen' (Fill tank). Below the display are four buttons with symbols: a play button, a light icon, a key icon, and a 'SET' button. Below the buttons are four circular indicators.</p>	<p>Top left: Symbolic representation of the unit function.</p> <p>Top right: Current pH value in the reaction tank.</p> <p>Centre: Text description of the unit function in keywords.</p> <p>Below: Dynamic assignment of button functions.</p>
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Symbol	Description
	Manual start of the neutralisation process, regardless of the fill level in the reaction tank, in the "Fill tank" state.
	Activates the backlight of the LCD display, otherwise no function is executed.
	Activates the service menu to change parameters or perform service functions (e.g.: Set language). The menu is password-protected against unauthorised access.
	Activates the calibration menu for calibrating the pH probe. The step-by-step calibration is described in detail in the operation chapter.

## LCD display with keypad in service mode

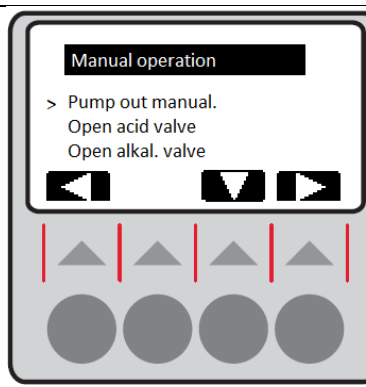




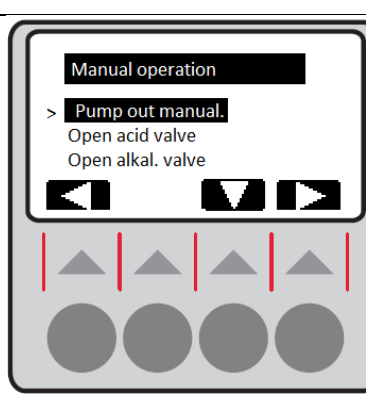




	<p>The service code is set by pressing the corresponding buttons and can be confirmed with the right button.</p> <p>If an incorrect code is entered, the control system returns to automatic mode.</p> <p>To reset the code and restart the entry, press the left button until a code above 1000 is reached, then the initial value of 100 is set again.</p>
	<p>The service menu offers the following options:</p> <p><b>Parameters:</b> Display and change parameters such as mixing time, control parameters, etc.</p> <p><b>Manual operation:</b> Performing manual functions such as pumping out, controlling valves.</p> <p><b>Service -&gt; 0:</b> Resets the maintenance message.</p>
	<p><b>Display parameters:</b></p> <p>Centre line: Name of the parameter Bottom line: Set value of the parameter</p> <ul style="list-style-type: none"> <li> Cancel process</li> <li> Display previous parameter</li> <li> Show next parameter</li> <li> Change parameters</li> </ul>
	<p><b>Change (edit) parameters:</b></p> <p>Centre line: Name of the parameter Bottom line: Setting range and setting value</p> <ul style="list-style-type: none"> <li> Cancel process</li> <li> Increase parameter value</li> <li> Decrease parameter value</li> <li> Save parameters</li> </ul>



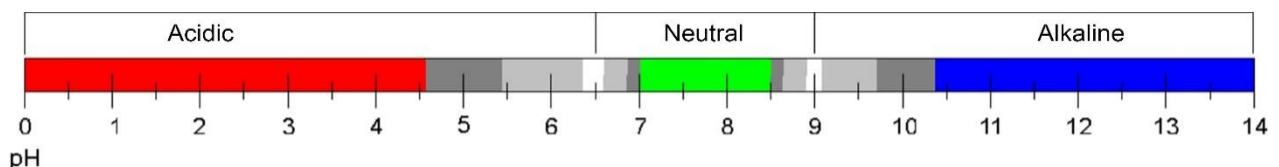
### Attention!

Functions activated in manual mode as described below can lead to uncontrolled dosing of chemicals or wastewater contaminated with chemicals entering the sewer system.


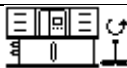


This is the sole responsibility of the operator!

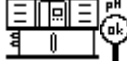
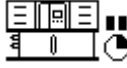

	<b>Manual operation (manual function):</b> > (Cursor) marks the current function  Cancel process  Select previous function  Select next function  Activate function
	<b>Manual operation (manual function):</b> The activated function is displayed inversely  Cancel process  Select previous function  Select next function  Deactivate function <b>Note: Changing the function deactivates all previous activations!</b>

### Definition of the neutral range



### Neutralisation process (batch operation):

Step	Description	Symbol in the display
1	The discharged wastewater is channelled into the reaction tank	
2	Once the maximum fill level has been reached, the container contents are first mixed.	
3	After premixing the contents of the container, acid or alkali is dosed from the reservoir tanks until the pH value in the reaction tank is within the legally permitted limits.	 (dosing valve open)  (dosing valve closed)

Step	Description	Symbol in the display
4	The pH value in the reaction tank must remain stable in the neutral range during the monitoring time, otherwise dosing will start again.	
5	After a preset monitoring time, the motor stops to change the direction of rotation	
6	The contents of the tank are pumped into the wastewater pipe.	

This fully automatic batch operation is controlled by a special measuring and control system with a RISC microcontroller.

## 7. OPERATION

### Commissioning

Switch on the unit with the main switch

Inlet ball valve opens (if present)

### Operating instructions

In normal operation, all control functions are performed automatically. Please refer to the maintenance schedule for the regular maintenance activities to be carried out by the operating personnel.

A regular check of the pH electrode ensures the functionality of the unit and thus compliance with legal requirements.

Attention! Risk of non-compliance with limit values. Regular recalibration ensures the functionality of the unit and thus compliance with the required limit values.




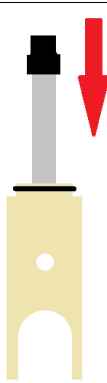
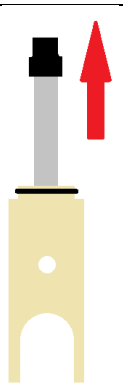

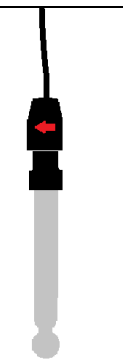

### Calibration of the pH electrode

#### Before calibration













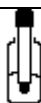

Please note the following points in advance:

- Before the first calibration, a pH electrode must first be placed in normal drinking water (not demineralised water!) for several hours in order to provide accurate measurement data.
- Also use normal drinking water to rinse the electrode.
- Please observe the electrode manufacturer's instructions on the supplementary sheet enclosed with each probe. If the supplementary sheet is no longer available, you can of course obtain a replacement from Kyocera.
- The glass membrane of the electrode is very sensitive to mechanical influences. Please proceed with appropriate caution during the calibration process.

## Disassembly and assembly of the pH electrode

Disassembly			Assembly		
Step	Description	Illustration	Step	Description	Illustration
1	Carefully pull the protective tube and bracket apart.		1	Unscrew the electrode plug.	
2	Unscrew the electrode plug.		2	<b>Carefully</b> insert the electrode into the holder and screw it hand-tight into the thread.	
3	Unscrew the electrode from the thread and <b>carefully</b> pull it upwards out of the holder.		3	Screw the electrode plug back on.	
4	Screw the electrode plug back on.		4	Plug the protective tube and bracket together.	

## Perform calibration

Step	Description	Symbol in the display
1	Pressing the button  in automatic mode sets the control system to calibration mode and stops automatic mode	*** Calibration ***
2	Remove the pH electrode from the fitting (see section "Disassembly") and clean carefully with water. When cleaning is complete, press  to continue.	
3	Immerse the pH electrode in buffer 1 and wait for a stable measured value (pH value in the top line), accept the measured value with the  button or set the correct buffer value with the  or  buttons.	
4	Remove the pH electrode from buffer 1 and clean it carefully with water. When cleaning is complete, press  to continue.	
5	Immerse the pH electrode in buffer 2 and wait for a stable measured value (pH value in the top line), accept the measured value with the  button or set the correct buffer value with the  or  buttons.	
6	Calibration log is displayed. This calibration data is permanently saved in the control system as soon as the  button is pressed. Calibration is now complete and the control system returns to automatic mode.	

## Information in the calibration log

The values in the top two lines indicate which buffer was used for calibration and which internal values were measured. These values can be helpful for troubleshooting, but are not relevant for calibration.

The lower lines indicate the zero point and the slope of the calibration. The further the zero-point deviates from the ideal value (0 mV), the greater the shift in the zero point. This is a quality criterion, a value greater than +/- 50 mV is an indication of "poisoning" of the electrode, the electrode should be replaced as soon as possible.

The steepness of the electrode serves as a further quality criterion. This is the ratio of the actual measured value to the theoretical value (-59 mV/pH). A slope of less than 80% is also an indication that the electrode will soon fail, so it should be replaced as a precaution.



Note: If the slope is below 80%, the electrode no longer measures reliably and should be replaced immediately!

## Notes:

If a fault occurs during calibration, this is shown on the display at the end of the calibration process. Please repeat the calibration.

## Topping up the chemicals

The chemical tanks of the neutralisation unit should be checked from time to time by checking the level on the sight glass. Refilling is necessary if the fill level falls significantly below 5 litres.

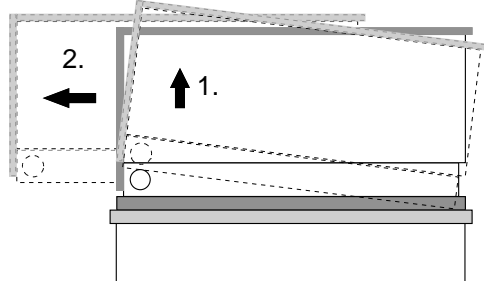
Please proceed as follows:

- Switch off the unit
- Unscrew and remove the plug from the empty container



Attention: It is essential to wear protective goggles, gloves and protective clothing when carrying out the following steps, as accidents involving acid and alkali can result in severe burns.

### Filling the acid and alkali tank



- Pull the container out forwards until it locks in place or remove the container from the holder (sketch) and place it on a stable surface
- Unscrew the cover
- Fill acid and alkali tank with:
  - ◆ Hydrochloric acid HCl or ◆ caustic soda NaOH, maximum concentration 20%, technical quality sufficient!



Never mix acid and alkali, as this will lead to a violent reaction between the chemicals and generate a lot of heat!

Risk of tipping! Do not place the chemical canister on the tank when filling.

Please adhere to the specified concentration. At higher concentrations, the service life of the seals is considerably reduced.

### After filling

- Screw the cover on
- Remove any contamination (splashes) immediately.
- Put the tank back into the holder and make sure it is seated correctly.
- Insert the plug into the control system and lock it.
- Switch the unit on again.



Tip: When filling the chemicals for the first time, the tanks should be filled no more than half full, as they must be removed again by the service department during commissioning activities or in the event of a leak in the chemical container (e.g.: damage during transport).

## 8. MALFUNCTIONS AND TROUBLESHOOTING

Follow the list and check the individual questions. If the answer is "Yes", go to the next point; if the answer is "No", read the instructions in the right-hand column.



**Attention:** Before working on the electrical parts of the neutralisation unit, disconnect the plug in the supply line. Disregard can result in considerable damage to property and personal injury!!!

Fault:	Check	Action if "No"
Unit not working	Repair switch in position "I"?	Switch on the repair switch
	Is the supply plug inserted correctly?	Insert supply plug correctly
	Voltage at the mains socket?	Have the cause determined by an electrician
	Fault in electrical circuit, request service!	

Unit does not fill	Ball valve in supply line open (knob parallel to pipe?)	Open ball valve
	Inlet strainer still clean?	Close the ball valve, unscrew the strainer tube holder, clean the strainer insert, screw in the strainer tube holder, open the ball valve again
	Is X11 plug on the rear of the control system plugged in?	Insert plug firmly and lock clockwise
	Request service!	
"ALARM PH MEASUREMENT" message	Are the cable connections of the pH electrode still OK?	Screw or lock the cable tightly.
	pH electrode still OK (visual check)?	Order a new pH electrode or request service
	Probe recalibrated in accordance with the maintenance schedule?	Recalibrate electrode
	Order service!	
Unit has been running for a long time without any change in the pH value	Are sufficient neutralisation chemicals still available?	Refill container
	Are the pH electrode and chemical tank cables plugged in?	Plug the cable into receptacle X5 on the control system and lock it in place
	pH electrode still OK (visual check)?	Order a new pH electrode or request service
	Probe recalibrated in accordance with the maintenance schedule?	Recalibrate electrode
	Order service!	
Storage tank control system issues alarm	Tank full and neutralisation unit neutralising?	See point "Unit does not fill"
	Stop operation and wait until the alarm light goes out again (switch off the horn with the "Acknowledge" button)	

The following cases require a service call without prior inspection:

- Message "Motor fault" appears on the display
- Control system stops during the mixing process, despite display of pH value > 6.5 and < 9.0
- Unit does not mix (lack of motor noise) or does not pump out
- Unit overflows

## 9. SHUT DOWN THE DEVICE

In automatic mode, press the button  to close the motor ball valve

After switching off the motor ball valve, turn the repair switch on the control system to the "0" position



## 10. ASSEMBLY

### Quality control

Kyocera laboratory equipment has been used for several years to protect the environment and building structures. Strict quality control of every device delivered ensures that our products only leave our premises in perfect condition.

### Unpacking

To prevent damage to the device, transport and removal of the packaging as well as assembly should be carried out with appropriate care.

We recommend that you observe the following points:

Secure the device against knocks or falling during transport.

Particular care must be taken when handling pointed or sharp objects due to the housing material.

Do not use any aggressive or abrasive cleaning agents to clean the device.



Important: We strongly recommend wearing safety goggles when removing the transport straps to protect against eye injuries

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### Checks on delivery

We recommend a visual inspection of the packaging for external damage as soon as the neutralisation unit is delivered. The device should be unpacked and visually inspected as soon as possible after delivery. In addition to checking for external defects, the scope of supply must also be checked. If a defect is discovered, a written complaint must be submitted to us within 5 working days of delivery, stating the order number and the reason for the complaint.

### Environmental protection and packaging

The packaging required for the safe transport of our environmental equipment has already been reduced to a minimum. We recommend recycling the materials used as follows:

Packaging cardboard is fed into the recycling cycle as a valuable raw material.

The packaging film is made of polyethylene (PE) and can likewise be recycled.

For stability reasons, the tensioning straps are made of fibreglass-reinforced plastic and are therefore residual waste.

For the disposal of wooden pallets, please contact the municipal waste disposal companies.

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## 11. INSTALLATION

The Kyocera C100 neutralisation unit can be installed in laboratory furniture or operated free-standing.

In general, however, the following points should be taken into account during planning:

- The unit requires a minimum substructure height of 64 cm, as otherwise it is not possible to remove or pull out the chemical containers for filling.
- In order for the Kyocera neutralisation unit to function properly, the local conditions must ensure that the device is installed horizontally. Installation on the floor is best, as the unit can be precisely aligned using the 3 levelling screws, thus ensuring safe operation.
- When installing on a frame, make sure that the support area is not too small so that the contact pressure does not lead to deformation of the plastic housing due to the high weight when filled.

- The nature of the installation site should take into account that carelessness when handling the chemicals or leaks at the connections can lead to contamination in the installation area. Ideally, it should be installed in a tiled tray that is equipped with a floor drain to remove impurities.
- The drain into which the neutralised wastewater is to be pumped shall not be higher than one metre from the lower edge of the unit.
- The unit requires a connection for the emergency overflow, which may be positioned a maximum of 20 cm above the lower edge of the neutralisation unit in order to ensure a sufficient gradient to the sewer.
- The installation site must be easily accessible for the service technician and must provide sufficient space for carrying out routine and service work.
- The venting of the reaction tank must be connected to a continuous extraction system so that no aggressive vapours and gases can escape from the system.
- The room temperature at the installation site must not fall below +5°C in order to ensure reliable operation of the control system and to prevent the unit from freezing.
- A wastewater connection (min. DN 50) must be available directly at the installation location of the unit; if the unit is designed with a storage tank, an overflow connection (min. DN 100) must also be available.

## Plumbing connections

The inlet connection ① and the overflow connection ② of the neutralisation unit are designed ex works with a threaded socket R 1½". This enables a universal connection with all common materials used in installation technology.



**Important:** The overflow connection ② must be routed into the wastewater pipe via the shortest route and must not be prevented from functioning properly as an emergency overflow by a reducer, a waste trap, or a stop device

Inlet, overflow, venting of reaction tank;

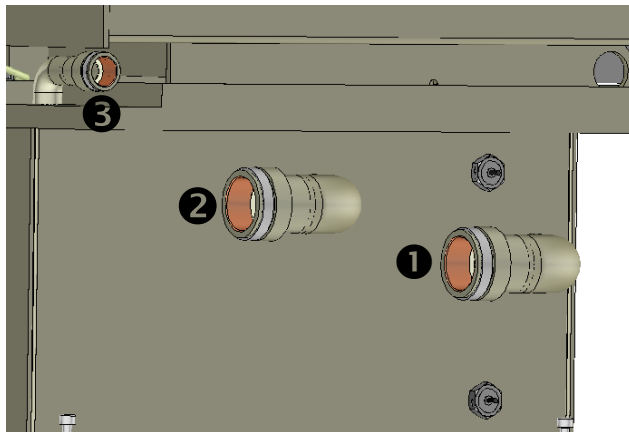


Figure 2.3: Plumbing connections

Mix-pump unit, chemical tank

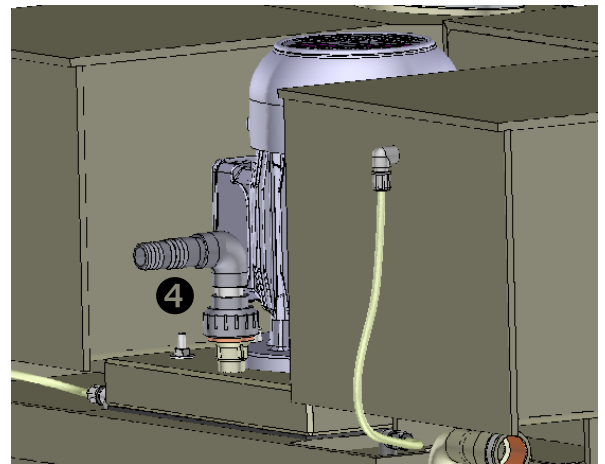


Figure 2.4: Pump-out connection

To vent the unit, a connection with an internal thread size R3/4" is provided, located under the unit's acid tank. The connection should be connected to an existing ventilation pipe or routed to the outside with a pipe or hose connection via a continuous extraction system.



**Note:** To ensure that the unit functions properly, we strongly recommend that the ventilation system is connected correctly ③. In special cases, considerable material damage may otherwise occur due to acid vapours or a malfunction of the overflow.

The pump-out connection ④ of the neutralisation unit is located directly behind the motor of the mix-pump unit. A DN15 hose nozzle was provided for the connection so that a simple connection to the existing wastewater pipe is possible.

The following points must be observed when installing the lines.

- The pump connection ④ must be routed into the wastewater pipe without a stop device. Components such as syphons are not necessary due to the design of the unit and lead to a reduction in the flow rate or, in extreme cases, to faults in the operation of the unit.
- The maximum pump-out height is 1 m from the lower edge of the neutralisation unit. The maximum flow rate is 10 l/min. For higher pumping capacities, please contact our application technology department.
- In the case of wastewater pipes that are laid below the unit level, the flow of the wastewater must be interrupted (e.g.: by a higher funnel), as otherwise the suction effect could cause unneutralised wastewater to enter the sewer system.
- Due to the corrosive properties of the medium to be neutralised, no metallic materials may be used for parts in contact with the medium.
- Please note that devices such as fume scrubbers, which discharge their wastewater into the neutralisation unit, have smaller drain cross-sections. In this case, a transition to the larger inlet cross-section of the neutralisation unit must be made.

## Electrical connection

The mains connection of the Kyocera neutralisation unit is equipped with a plug-in connection to ensure reliable disconnection from the mains and easy replacement of the complete control system for servicing. The neutral conductor must always be connected, as otherwise malfunctions or the destruction of individual components may occur.

Ensure that the supply line fuses are clearly labelled and clearly laid out.

Arrangement of the connections on the rear of the control system and their function:

- X3: Connection to the motor mix-pump unit
- X8: Bottom float switch (minimum fill level)
- X9: Top float switch (maximum fill level)
- X10: Plug-in connection for connection line, for interlocking with Kyocera fume scrubber and neutralisation unit
- X11: Plug-in connection for connecting motor ball valve or storage tank
- X12: Plug-in connection for potential-free fault signalling

Please refer to the enclosed wiring diagrams for the wire allocation on the individual connectors

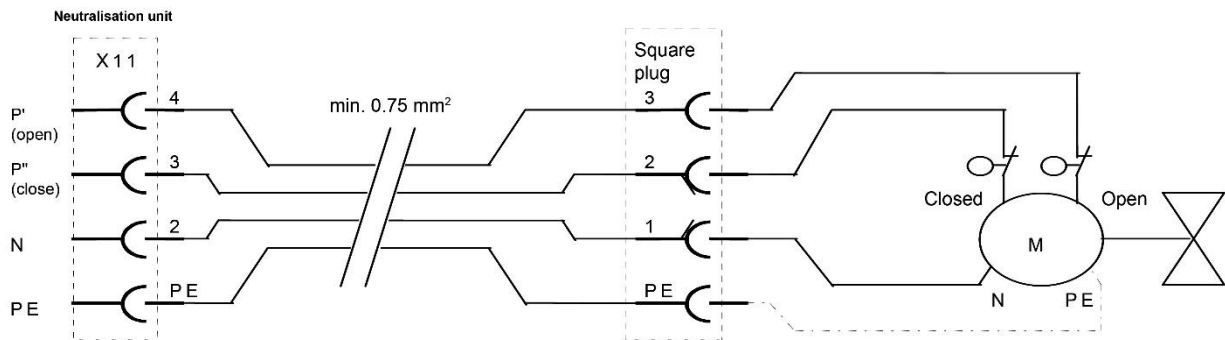


**Important:** The electrical connection of the neutralisation unit should be carried out by a qualified electrician. Damage caused by improper connection is excluded from the warranty!

The applicable standards must always be observed and applied!

Depending on the version and application of the neutralisation unit, the required connection cables are not included in the scope of supply, as different cable versions and cable lengths are required depending on the local conditions. These cables should have a minimum cross-section of 1 mm<sup>2</sup> and a chemical-resistant sheath (e.g.: PVC). The protective earth conductor (PE) must be included and connected in every cable.

Figure 3.2: Motor ball valve connection



Further information on the electrical design can be found in the enclosed wiring diagrams.

## 12. INITIAL COMMISSIONING

The initial commissioning of the device should be carried out by a trained and experienced technician from a Kyocera service partner, as parts of the unit may be damaged or destroyed if faults occur in the plumbing or electrical installation. In the event of unauthorised commissioning, Kyocera shall only be liable for faults that are demonstrably attributable to material or assembly errors at the factory.

Initial commissioning can only take place after the Kyocera neutralisation unit and the associated components have been fully assembled. The installation site must be freely accessible and any materials required, such as ladders, tools, etc., should be available. Please also note the information on the order confirmation. The Kyocera service partner will check all the necessary requirements before commissioning.

Commissioning includes the following activities:

- Checking the installation and functional testing of the unit with the additional components supplied
- Instruction of the operating personnel
- Test run in the presence of the operator and operating personnel
- Answering questions



**Note:** The Kyocera service partner will only commission the Kyocera neutralisation unit and the parts supplied by Kyocera. However, it is advisable to set up the components associated with the neutralisation unit on the same day so that the interaction of the individual parts can also be tested. In any case, the Kyocera service partner will endeavour to take desired dates into account as far as possible.



Please contact the supplier of the unit or Kyocera directly to request the Kyocera service partner. It is also possible to contact the responsible Kyocera service partners directly. More information on the Internet at [www.kyocera-fineceramis.de](http://www.kyocera-fineceramis.de)

## 13. MAINTENANCE AND SERVICING

### Regular maintenance

The Kyocera neutralisation unit is low-maintenance thanks to its design and high-quality components.

Nevertheless, it is advisable to carry out maintenance every 6 to 12 months, even for devices that are not used very often. This service can be carried out by an employee of the Kyocera service organisation on request.

### Maintenance schedule

The maintenance and inspection schedule gives you an overview of the maintenance and inspection activities to be carried out regularly.

Maintenance and inspection activities	Carried out by	Maintenance interval*
Visual inspection for leaks in the fittings, the housing and the connecting hoses.	Operating personnel	Monthly
Functional test and cleaning of the pH measurement, calibration if necessary.	Operating personnel	Every 1-2 months
Check the plug-in connections on the neutralisation unit and on the fittings for firm seating.	Operating personnel	Yearly
Cleaning the inlet strainer upstream of the inlet ball valve	Operating personnel	As required
Complete inspection of the unit (inspection, if applicable cleaning of the interior, storage container, dosing valves, mix-pump unit; checking of the entire control system)	Kyocera Service partner	Yearly*

\*) In the case of heavily used units (e.g. 24-hour operation) or very heavy chemical loads (concentrated acids and alkalis are introduced) as well as heavy contaminant loads, the maintenance intervals should be shortened accordingly.



#### Attention!

The surface of the device is sensitive to scratches! The housing can be scratched if aggressive or abrasive cleaning agents are used! Only use mild cleaning agents to clean the housing.

## 14. ENVIRONMENTAL PROTECTION

### Packaging

Kyocera environmental devices have been used for several years to protect the environment and building structures. In order to continue to take environmental protection into account, the packaging required for safe transport has been reduced to a minimum. Accordingly, we ask you to observe the following recommendations when disposing of packaging materials:

- Please dispose of packaging cardboard as recyclable material at the waste recycling centre in your district.
- The packaging film is made of polyethylene (PE) and can be recycled. Please also dispose of as recyclable waste.

- The conveyor belts are made of glass-fibre-reinforced plastic to ensure the required stability. They must be disposed of as residual waste.
- The disposal of the wooden pallets is carried out by the municipal waste disposal companies. Please contact your city or municipal administration.

### Note on disposal



Electrical and electronic devices contain valuable recyclable materials and components that can pose a potential risk to human health and the environment if handled or disposed of incorrectly. This also applies in particular to all parts that come into contact with chemicals. Therefore, FRIDURIT products must not be disposed of with household waste.

WEEE reg. no. DE 40217002

## 15. APPENDIX

### Spare parts

Part designation:	Part no:	Wear part
Dosing valve for chemical tank cpl.	L-Dosierventil	
Mix-pump unit, complete	L-Misch/Pumpaggr	
O-ring mixing auger 59x2.5 FPM	L-386355	
pH single-rod electrode with screw-in/plug-in head	L-384577	<b>X</b>
Cable for plug-in electrode	L-384578	<b>X</b>
Buffer solution pH 4.0 (100 ml)	L-386116	<b>X</b>
Buffer solution pH 7.0 (100 ml)	L-386115	<b>X</b>
Protection tube pH electrode cpl. (without electrode)	L-386362	
Float switch (black) with R1/2" thread	L-386995	
Control system C100 cpl. *	L-386358	
Motor flange gasket	L-386332	<b>X</b>

Wearing parts are colour-coded

Further spare parts on request

\*Please state device number and order number when ordering.

### Circuit diagrams

The circuit diagram for this Kyocera C100 neutralisation unit is included loose in the appendix to these instructions.

## Parameter list

The parameters are preset at the factory and optimised for the unit. Only the Kyocera service partner should change these parameters in order to avoid unit malfunctions.

Parameter	Internal designation Range	Default setting	Explanation
Premixing time	Premix time 5 - 255	60 seconds	Mixing the contents of the container before adding the actual dosing agent.
Acid dosing interval	Cycle time acid 1 - 60	25 seconds	Time intervals between the addition of dosing agent.
P-range acid	p-band acid 1 - 50	25 pH	Control parameters for P range
Alkali dosing interval	Cycle time soda 1 - 60	35 seconds	Time intervals between the addition of dosing agent.
P-range alkali	p-band soda 1 - 50	30 pH	Control parameters for P range
Minimum pump-out time	Pump time min 10 – 600	180 seconds	Minimum switch-on time for pump-out <sup>(1)</sup>
Maximum pump-out time	Pump time max 10 – 1200	300 seconds	Maximum switch-on time for pump-out, after which the unit switches to infeed.
Motor stop time	Pump stop time 5 – 30	10 seconds	Motor waiting time after step Check before changing direction of rotation
Lower nominal value	Lower pH 4.0 - 8.0 pH	6.5 pH	Alkali is dosed below this value.
Upper nominal value	Upper pH 6.0 - 10.0 pH	9.0 pH	Acid is dosed above this value.
Operating language	Screen language German / English	German	Switch operating language (currently German and English)
Modbus address	Modbus address 1 – 127	1	Modbus address is used when networking multiple units
Switch on pre-dosing	Predos enable 0 / 1	0	Switch on pre-dosing (function is currently not supported)

(1) Prevents malfunction if the lower float switch is defective

## 16. DECLARATION OF CONFORMITY

Wir/We/Nous: **KYOCERA Fineceramics Europe GmbH**  
**Umweltapparate**  
**Steinzeugstraße 92**  
**D - 68229 Mannheim**

erklären in alleiniger Verantwortung, dass das Produkt  
 declare under our sole responsibility that the product  
 déclarons sous notre seule responsabilité que le produit

**FRIDURIT® Neutralisationsanlage C100**  
**FRIDURIT® neutralisation C100**  
**FRIDURIT® appareil de neutralisation**

auf das sich diese Erklärung bezieht, mit den Anforderungen der folgenden Richtlinien und Normen  
 übereinstimmt.

is in conformity with the requirements of the following directives and standards.  
 est conforme aux exigences des directives et des normes suivantes.

Richtlinie(n) / Directive(s) / Directive(s)		Norm(en) / Standard(s) / Norme(s)
2006/42/EG	Maschinen-Richtlinie	EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019
2006/42/EG	Machine-Directive	
2006/42/EG	Directive Machine	
2014/30/EU	EMV-Richtlinie	EN 61000-6-2:2005/AC:2005 EN 61000-6-3:2007/A1:2011/AC:2012
2014/30/EU	EMC-Directive	
2014/30/UE	Directive CEM	
2011/65/EU	RoHS-Richtlinie	EN IEC 63000:2018
2011/65/EU	RoHS-Directive	
2011/65/UE	Directive RoHS	

Der oben beschriebene Gegenstand der Erklärung erfüllt die Vorschriften der Richtlinie 2011/65/EU des Europäischen Parlaments und des Rates vom 8.Juni 2011 zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektrogeräten.

The object of the declaration described above is in conformity with Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

L'objet de la déclaration décrit ci-dessus est conforme à la directive 2011/65/UE du Parlement européen et du Conseil du 8 juin 2011 relative à la limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques

Mannheim, August 2023

Armin Kayser  
 Managing Director

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 Environmental Equipment - Application  
 Technology

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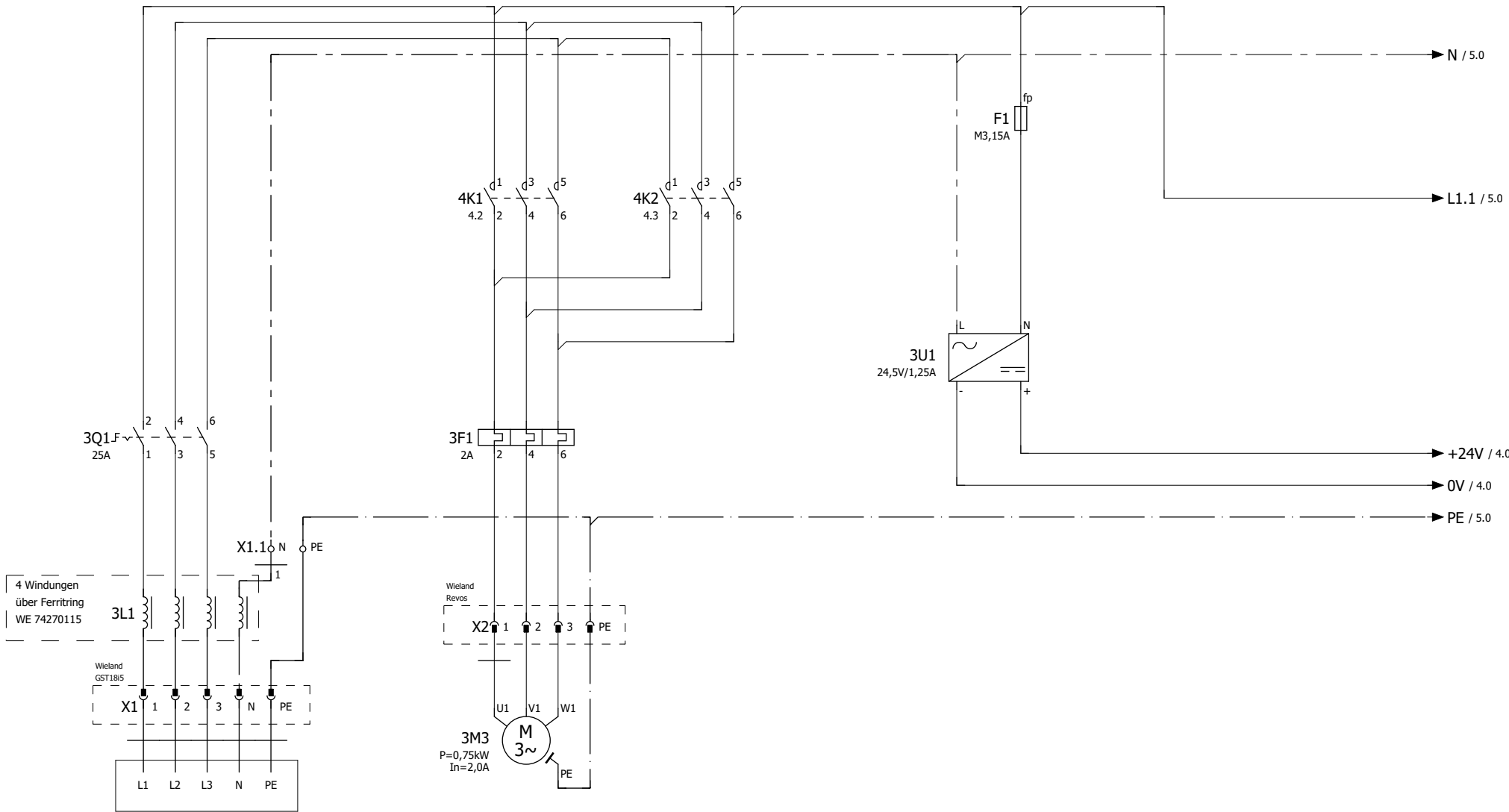


KYOCERA Fineceramics Solutions GmbH

Steinzeugstraße 92  
D-68229 Mannheim (GERMANY)

Firma / Kunde	
Projektbeschreibung	Neutra-Anlage C100
Projektnummer	NA C100-2004
Kommission	
Hersteller (Firma)	
Pfad	NEUTRA\C1002004.*
Projektname	C100_KFSG
Fabrikat	FRIDURIT Neutra-Anlage
Typ	C100-2004
Installationsort	
Projektverantwortlicher	
Teilebesonderheit	
Erstellt am	28.07.2003
Bearbeitet am	02.10.2020
von (Kürzel) schmittc	
Anzahl der Seiten	
5	

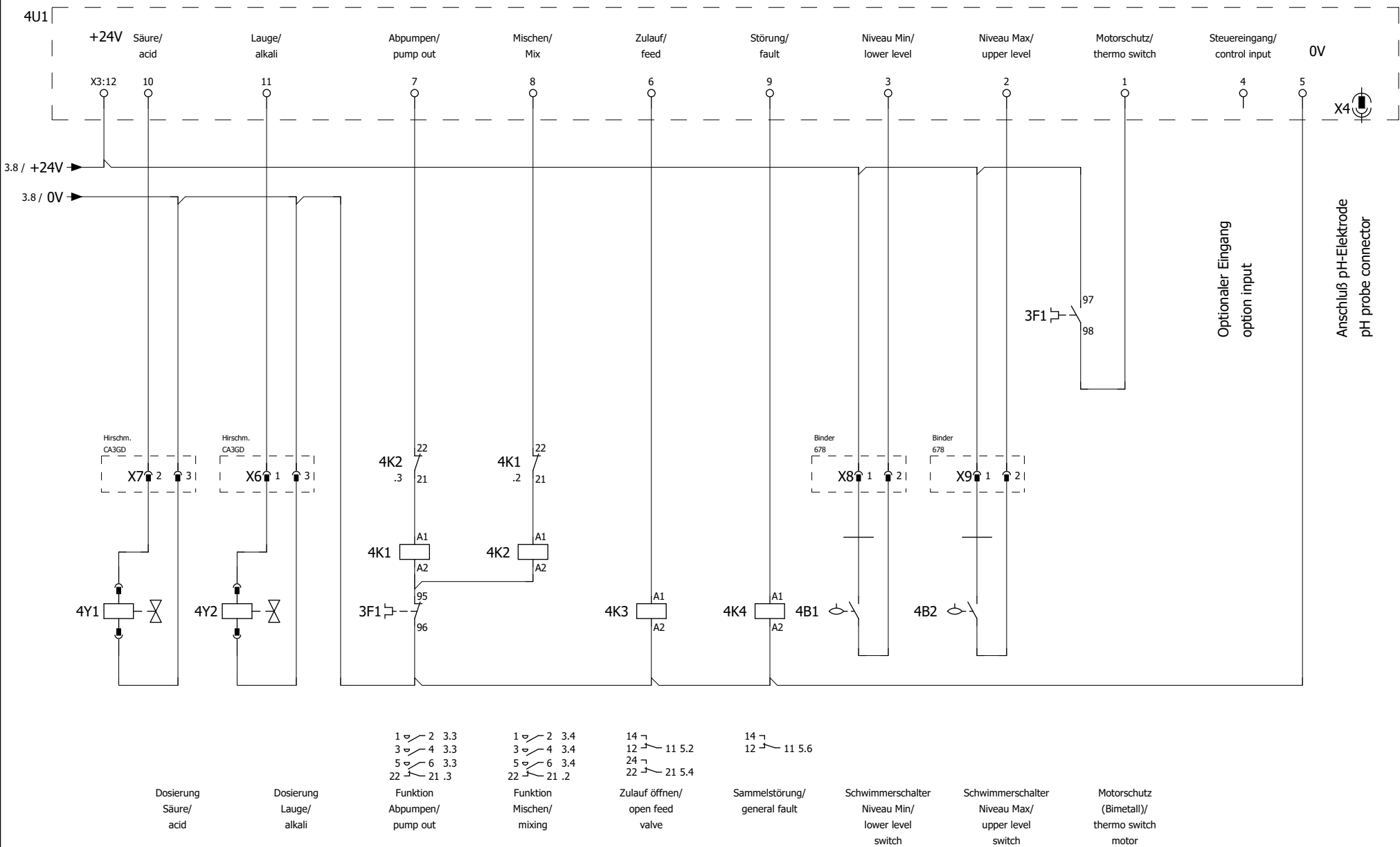


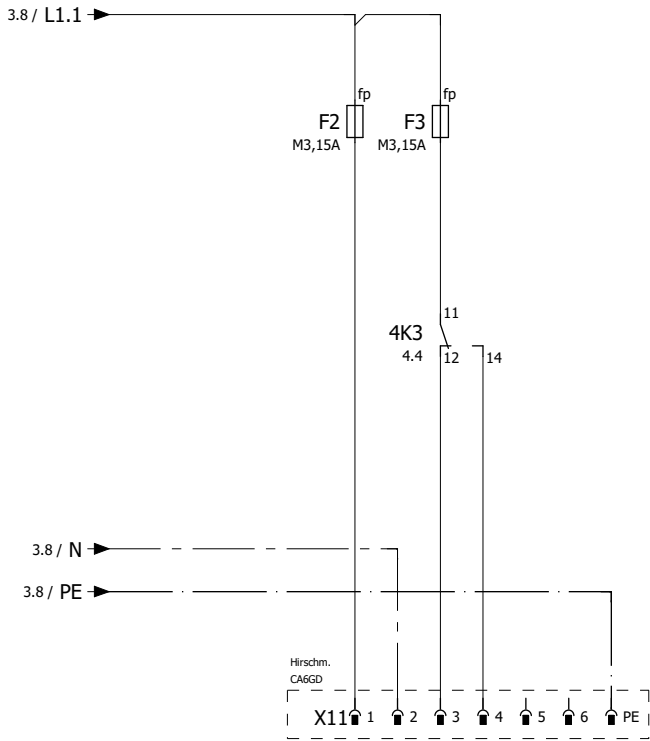


Netz Einspeisung (Power supply)  
400V, 50Hz  
Vorsicherung (fuse) max. 16A

Misch-Pump-Aggregat  
mix and pump unit

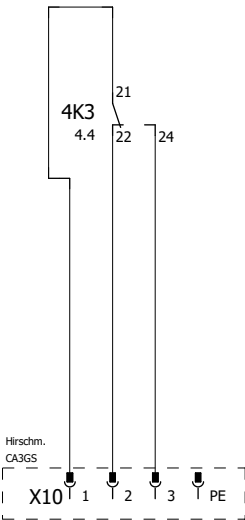
Stromversorgung 24V DC  
power supply 24V DC  
PH30 - 2401





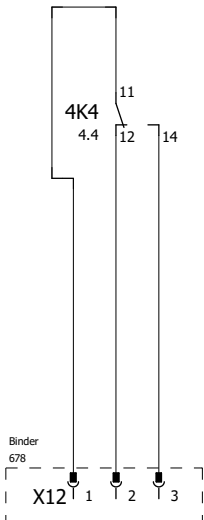
Einbaubuchse Peripherie/  
socket peripherals

Anschlußmöglichkeit für:  
Zulauf-Magnetventil bzw. -Motorventil,  
Vorlagebehältersteuerung, etc.  
Connecting f.e.:  
inlet solenoid valve, inlet motor ballvalve,  
storage tank, etc.



Einbaustecker Verriegelung/  
fume scrubber lock

Verriegelung mit FRIDURIT Abluftwäscher,  
Relais zieht an wenn Anlage füllbereit  
  
Connecting with FRIDURIT fume scrubber,  
Relay switched on when unit is  
in inlet mode



Einbaustecker Sammelstörmeldung/  
voltage-free relay output general fault

Störmeldung potentialfrei als Sammelstörung,  
Störungsursache im Display  
  
General fault contact voltage-free,  
description of fault on the lcd-display