KUNTZE









NEON® ONE
KRYPTON® ONE

Manual

CLEAR.CONTROL.CONNECT

KUNTZE.COM

Table of Contents

1. NEON® ONE Platform 1
    1.1. Introduction 1
    1.2. General and Safety Instructions 2
        1.2.1. Purpose of This Manual 2
        1.2.2. Manual Retention 2
        1.2.3. Safety Compliance 2
        1.2.4. Warning Symbols 3
        1.2.5. Residual Risks and Hazard Mitigation 3
        1.2.6. Required Mitigation Measures 4
        1.2.7. Lifting and Carrying Instructions 4
    1.3. Warranty Conditions 5
    1.4. Transport Damages 5
    1.5. Application 5
        1.5.1. Intended Use 5
2. Technical Data 7
    2.1. System Overview 7
    2.2. Electrical Ratings and Power Supply 7
    2.3. Input and Output Interfaces 7
    2.4. Ambient Conditions 8
    2.5. Design Configuration 8
    2.6. Measurement Specifications 9
    2.7. Safety and Protection Ratings 9
3. Installation 10
    3.1. General Information 10
    3.2. Mechanical Installation 10
    3.3. Sensor and Water Connection 13
    3.4. Power Supply Connection 13
    3.5. Sensor and System Connection 13
        3.5.1. NODE and HUB Cable Connections 13
        3.5.2. LED Status Indicators on NEON® ONE | NODE 14
    3.6. Sensor Setup / Sensor Group Definition 14
    3.7. CAN Bus Interface and Cable Limits 16
    3.8. Cooling and Noise Emission 16
    3.9. Hardware Modules 16
        3.9.1. Safety Instructions for Module Replacement or Expansion 17
        3.9.2. Overview of Available Hardware Modules 17
        3.9.3. Connection Overview 19
        3.9.4. NEON® ONE | Board 20
        3.9.5. NEON® ONE | I/O Board 21
        3.9.6. NEON® ONE | NODE Input 22
        3.9.7. NEON® ONE | Analog Output 23
        3.9.8. NEON® ONE | Analog Input 24
        3.9.9. NEON® ONE | Digital Output 25
        3.9.10. NEON® ONE | Digital Input 26
        3.9.11. NEON® ONE | Relay Board 26
4. Operation 29
    4.1. Operating Interface and Controls 29
        4.1.1. Start Screen Overview 29
        4.1.2. Access Control and User Login 31
        4.1.3. Sensor Detail Overview 32
        4.1.4. Main Menu Overview 36
        4.1.5. HUB Configuration: Input and Output Assignment 37
        4.1.6. Add-on Modbus TCP 37
    4.2. System Integration and Accessories 44

4.2.1. System Components Overview 44
4.2.2. Hardware Configuration 45
4.2.3. Accessory Compatibility 45
4.3. Operating Mode and Runtime Behavior 45
4.4. Consumable Components 45
4.4.1. Consumables Supplied by Kuntze 46
4.4.2. Required Calibration Chemicals (Not Supplied) 46
4.5. Protection Impairment Notice 46
5. Maintenance 47
5.1. Maintenance Mode and System Behavior 47
5.2. Preventive Maintenance Overview 48
5.3. Calibration and Guided Workflow 48
5.4. Gasket and Seal Inspection 48
5.5. Safety Feature Verification 48
5.6. Cleaning and Decontamination 48
5.6.1. Sensor Cleaning 49
5.6.2. Cleaning of Assemblies and Filters 49
5.6.3. Optional: Automatic Sensor Cleaning (ASR®) 49
5.7. Fuse and Power Supply Notice 50
5.8. Restarting After Maintenance 50
5.9. Information for Service Personnel 50
6. System Integration & Special Conditions 51
6.1. Integration Into Systems 51
6.2. Application-Specific Ambient Conditions 51
6.3. Interactions With Other Systems 51
6.4. Environmental and Electrical Safety Notes 52
7. Environmental Information & Disposal 53
7.1. Disposal of Electrical and Electronic Equipment 53
7.2. Disposal of Waste Batteries 53

1. NEON® ONE Platform

1.1. Introduction

Thank you for choosing the NEON® ONE platform, designed to provide precise measurements and reliable control for various applications in water quality management. Within this platform, two system variants are available:

- **KRYPTON® ONE | COMPACT** – a fully integrated solution combining measurement and control in one enclosure.
- **KRYPTON® ONE | HUB** – identical in function to the COMPACT, but equipped with additional relay outputs for extended control and alarm capabilities.

Throughout this manual, the term “NEON® ONE” refers to the central measurement and control device used in both KRYPTON® ONE system configurations. When referring to the system, this includes the NEON® ONE along with all connected components such as sensors, NODEs, flow assembly, and HUB (if applicable).

The NEON® ONE combines advanced sensor technology with user-friendly operation, enabling accurate and continuous monitoring of key parameters to support optimal environmental and industrial processes. It offers flexibility and adaptability, ensuring compatibility with a wide range of sensors to meet diverse monitoring requirements. Equipped with a built-in Gateway and Cloud Connect® access, the NEON® ONE provides seamless connectivity, enabling remote access, data logging, and real-time monitoring from virtually anywhere. This cloud integration ensures that users have secure, 24/7 access to critical data, supporting proactive management and quick response to changing conditions. Please read this manual carefully before installing and using your system to ensure proper setup and operation. The information provided will guide you through essential procedures, safety requirements, and maintenance tips to help you maximize the performance and lifespan of your NEON® ONE device.

Key Features of the NEON® ONE:

- **Multi-Parameter Monitoring**: Supports various sensors for measurements such as pH, conductivity, chlorine, and more.
- **Enhanced Data Accuracy**: Employs advanced algorithms to ensure high-precision readings across all parameters.
- **User-Friendly Interface**: Equipped with an intuitive display and menu navigation for easy operation and configuration.
- **Robust Design**: Built to withstand demanding environmental conditions for reliable long-term operation.
- **Integrated Gateway and Cloud Connect®**: Provides remote data access and management, allowing real-time monitoring and alerts through a secure cloud platform.
- **Versatile Connectivity**: Offers multiple connectivity options for integration with external systems and data transfer.

For specific details on installation, configuration, operation, and troubleshooting, refer to the relevant sections of this manual. For further assistance, please contact your local distributor or service provider.

1.2. General and Safety Instructions

1.2.1. Purpose of This Manual

This manual provides essential information to ensure the safe installation, operation, maintenance, and disposal of the KRYPTON® ONE systems. It is intended for qualified personnel trained in handling electronic measuring and control equipment. In accordance with DIN EN IEC 61010-1, this manual is considered an integral part of the product. It must be kept accessible at all times during use and transferred to any future owner of the device.

The instrument was designed, built, and tested according to the directives for electronic devices and has left our company in perfect working condition. To preserve this condition and ensure safe operation, follow all these instructios carefully and pay special attention to all warnings issued in this manual. If the instrument is visibly damaged or has been stored inappropriately or if there are any doubts concerning safe operation, shut it down and make sure it cannot be restarted.

You will notice certain safety instructions are highlighted:

⚠ **Warning**: Highlights potential hazards that could lead to injury, equipment damage, or data loss if not followed correctly.

ⓘ **Important**: Marks essential instructions that are critical for successful operation, installation, or configuration.

Note: Provides helpful tips, background information, or clarifications to support better understanding or usability.

1.2.2. Manual Retention

Always retain this manual with the product. It includes critical safety guidelines, warnings, and functional instructions. Reference to the manual is particularly necessary when encountering safety symbols.

1.2.3. Safety Compliance

The NEON® ONE products were developed and tested in accordance with applicable European and international safety standards, including:

- DIN EN IEC 61010-1 – Safety for electrical measurement and control equipment
- DIN EN 61326-1 – Electromagnetic compatibility (EMC)
- IEC 60529 – Protection classes (IP ratings)

To maintain compliance and safe operation:

- Follow all instructions in this manual.
- Operate the device strictly within the specified environmental and electrical conditions.

- Do not use the device if it is damaged or has been stored improperly.
- Ensure regular inspection and functional checks to prevent undetected hazards.

1.2.4. Warning Symbols

Always consult this manual and read the associated warning label on the device before performing any installation, configuration, or service work.

The following table lists the safety and functional symbols used on or in association with the KRYPTON® ONE systems:

Warning Symbols and Explanations

Number (DIN)	Symbol	Explanation
3		Direct and alternating current – Equipment operates with AC or DC power.
12		Warning – Risk of electric shock. Touching live parts may cause injury or death.
14		General warning sign – Refer to user manual for safety-relevant information.

All actions related to installation, operation, and maintenance must be performed in accordance with these safety symbols and their associated instructions provided in this manual.

When symbol ⚠ is present, consult this manual and read the corresponding warning text on the device before operation.

1.2.5. Residual Risks and Hazard Mitigation

Despite careful design and adherence to international safety standards, certain residual risks may remain when using the KRYPTON® ONE systems. These risks cannot be entirely eliminated through structural or electrical safeguards and must therefore be mitigated by the user or system integrator.

Identified residual risks:

- Incorrect measurement interpretation due to:
  - Improper calibration.
  - Sensor signal loss.
  - Incorrect installation or configuration.
- Electrical hazards from live terminals inside the device when the housing is opened.
- Chemical hazards caused by exposure to hazardous media (e.g., chlorine, chlorine dioxide, ozone, acidic or alkaline calibration solutions).
- Process errors resulting from unverified input signals or system misconfiguration.

1.2.6. Required Mitigation Measures

To reduce or eliminate these risks during installation, operation, and maintenance:

1. **Calibration and Verification**
    - Calibrate all sensors at regular intervals using manufacturer-approved standard solutions:
        - Disinfectant and sulfite sensors: A reference measurement is required. Calibration must be performed using the Water Sample Calibration function while the sensor remains installed in the flow assembly with active water flow.
        - pH sensors: Use DIN-compliant or NIST-traceable buffer solutions (pH 4.00, 7.00, 10.00).
    - Always perform plausibility checks after calibration and before restarting the system.
2. **Flow Condition Control**
    - Ensure a stable flow through the measuring cell using STABIFLOW® ONE or a similar flow regulator.
    - Insufficient or fluctuating flow can lead to inaccurate or invalid measurements.
3. **Electrical Safety**
    - Only qualified personnel may open the housing or access terminal areas.
    - Disconnect the power supply before performing any electrical work.
    - Observe the warning symbol ⚠ indicating live parts.
4. **Use Only Specified Accessories**
    - Only use original NEON® ONE sensors, connectors and cables, and certified calibration solutions.
    - Use of third-party components may compromise safety, accuracy, or void the warranty.
5. **Operator Awareness**
    - Ensure that all persons working with the device understand the warning symbols.
    - When the symbol ⚠ is present, consult this manual and read the corresponding warning text on the device before operation.

The residual risks described here are based on a formal risk assessment. These risks must be managed by the operator through routine safety checks, proper training, and adherence to the procedures outlined in this manual.

1.2.7. Lifting and Carrying Instructions

The KRYPTON® ONE systems are supplied as a panel-mounted configuration. During transport or installation:

- Always lift by the panel or designated mounting points - never by cables, sensors, or connectors.
- For systems over 10 kg, use two people or appropriate lifting equipment.
- Avoid mechanical shocks or exposure to moisture during handling.

1.3. Warranty Conditions

The warranty for the KRYPTON® ONE systems is valid only if the following conditions are met:

- Installation and commissioning must be carried out by Kuntze Instruments-trained personnel or certified technicians.
- Maintenance must be performed as described in this manual and within defined intervals.
- The device must be used exclusively for its intended purpose as defined in this manual.
- Only original Kuntze Instruments accessories and spare parts may be used.
- The device must be operated within the environmental and electrical conditions specified in the technical data.

Any deviation from these conditions will void the warranty.

1.4. Transport Damages

Inspect the NEON® ONE and all components immediately upon delivery. If visible damage is detected:

- Do not connect or operate the device.
- Report the damage to the shipping provider and your local distributor within 24 hours of receipt.
- Retain all packaging for claims processing.
- Hidden damage must be reported immediately after detection.

1.5. Application

The NEON® ONE is designed for industrial water treatment applications, including drinking water, wastewater, and environmental monitoring. It can monitor water quality parameters such as free chlorine/ bromine, chlorine dioxide, ozone, hydrogen peroxide, sulfite, biocides, total chlorine, pH, redox potential (ORP), conductivity, and temperature.

The instrument checks the input signals, calibration results, and the waterflow, if a flow sensor is connected. It cannot detect erroneous settings or failures in the treatment system, nor can it check for plausibility! The safety of the system of which the instrument is part of lies within the reach of responsibility of whoever built the system.

1.5.1. Intended Use

The KRYPTON® ONE systems are intended for continuous measurement and control in water quality monitoring applications. It is specifically designed for use in industrial and municipal environments such as:

- Drinking water treatment plants
- Wastewater treatment facilities
- Cooling water and process water monitoring
- Environmental water monitoring systems
- Disinfection process control (e.g., chlorine/ bromine, chlorine dioxide, ozone, hydrogen peroxide)
- Swimming pools and spa

The system is suitable for measuring key parameters including but not limited to free chlorine/ bromine, chlorine dioxide, ozone, sulfite, biocides, total chlorine, pH, ORP, hydrogen peroxide, conductivity and

temperature. It supports the integration of additional sensors via analog or digital inputs, ensuring high flexibility for customized monitoring solutions.

Any use of the device outside the scope of applications defined above, including modification or operation under non-specified environmental conditions, may lead to incorrect measurements, equipment damage, and loss of warranty.

2. Technical Data

2.1. System Overview

The KRYPTON® ONE | COMPACT or HUB is a modular, panel-mounted water analysis system for multi-parameter monitoring. A typical configuration includes:

- NEON® ONE | COMPACT/ NEON® ONE | CORE (in the HUB version, the CORE always comes together with the HUB): Central measurement and control device.
- NEON® ONE | HUB (optional): I/O expansion unit with relays.
- STABIFLOW® ONE: Flow assembly for flow-stable measurement conditions.
- ZIRKON® ONE sensors: For pH, chlorine, ORP, conductivity, and more.
- All components are mounted on a PVC board (350 × 400 mm) and delivered pre-configured.
- Sensor mounting: Sensors are screwed directly into STABIFLOW® ONE via integrated threaded ports.
- Power supply: Integrated in the NEON® ONE housing (factory-installed).

2.2. Electrical Ratings and Power Supply

Power supply	85..265 V AC/ DC, 50..60 Hz or 24 V DC
Power consumption	<60 W (total system including HUB)
Internal output	24 V DC regulated (for internal modules)
Surge protection category	Category I (if no plug connection)
CE-Symbol	The product meets the requirements of the harmonized European standards and complies with the legal requirements of the EC directives
EMC	EN 61000 6-1 (3), EN 61000 6-2 (4), EN 61326-1

The internal power module must not be accessed or replaced by the user. Servicing is restricted to authorized personnel only.

2.3. Input and Output Interfaces

Analog inputs	• 4x current active 0/4..22 mA inputs, max. 500 Ohm (galvanically isolated against other modules) • 2x current active 0/4..22 mA inputs, max. 500 Ohm (galvanically isolated against each other)
Analog outputs	• 4x current active 0/4..20 mA outputs, max. 500 Ohm (galvanically isolated against other modules) • 2x current active 0/4..20 mA outputs, max. 500 Ohm (galvanically isolated against each other)
Digital inputs	8x active inputs (3.3 V internally biased), max. voltage difference 12 V, max. 50 Hz (galvanically isolated against other modules)
Digital outputs	8x open collector passive outputs, max. 24 V, max. 30 mA, max. 50 Hz (galvanically isolated against other modules)

Mechanical relays	4x potential-free SPDT mechanical contact, max. 250 V AC/ DC, max. 12 A per relay, max. 8 A combined
Solid-state relays	4x potential-free SSR contact, max. 250 V AC, max. 3 A
Alarm relay	1x potential-free SPDT mechanical contact, max. 250 V AC/ DC, max. 5 A
Terminal types	• Power supply: 0.14 - 2.5 mm² rigid / flexible cable (26 - 14 AWG), screw connection • Relay board: 0.14 - 2.5 mm² rigid / flexible cable (26 - 14 AWG), screw connection • Sensor and IO: 0.2 - 1.5 mm² rigid / flexible cable (24 - 16 AWG), 0.25 - 0.5 mm² conductors with ferrule, push-in spring connection

2.4. Ambient Conditions

Storage temperature	• System: -20..+65 °C / -4..+149 °F • Sensors: 5..+30 °C / 32..+86 °F
Water inlet	35..400 l/h
Min. inlet pressure	0.5 bar / 7.25 psi
Max. pressure	6 bar (at 20 °C) / 87 psi (at 68 °F)
Humidity	Max. 90 % rH at 40 °C / 104 °F (non-condensing)
Ingress protection code	IP 65

2.5. Design Configuration

Component	Mass	Mounting	Material
NEON® ONE | CORE	~1.9 kg	Pre-mounted on panel	PC
NEON® ONE | HUB	~1.9 kg	Pre-mounted on panel	PC
STABIFLOW® ONE	~1.9 kg	Pre-mounted on panel	PMMA PVC POM EPDM HASTELLOY®
NEON® ONE | NODE	~0.5 kg	Installation on the sensor ports	PBT PMMA
NEON® ONE cable	~0.2 kg	Via M16 / M12 glands	PUR
Panel	~1.5 kg	350 × 400 mm, wall-mountable	PVC
ZIRKON® ONE sensor	~0.25 kg	Threaded mount in STABIFLOW® ONE	Glass Plastics Gold Platinum Carbon

2.6. Measurement Specifications

Temperature	−5..+70 °C / +23..158 °F
pH	0..14.00
Redox potential (ORP)	−1500..+1500 mV
Conductivity	0..3.000 mS/cm TDS
Free chlorine	0..20.00 ppm
Free bromine	0..20.00 ppm
Chlorine dioxide	0..20.00 ppm
Ozone	0..10.00 ppm
Biocides and total chlorine	0..20.00 ppm
Sulfite	0..20.00 ppm

2.7. Safety and Protection Ratings

Ingress protection code	IP 65
CE-Symbol	The product meets the requirements of the harmonized European standards and complies with the legal requirements of the EC directives.
EMC	EN 61000 6-1 (3), EN 61000 6-2 (4), EN 61326-1

3. Installation

3.1. General Information

Install the instrument in a location free from mechanical strain (e.g., vibrations or physical impact) and away from chemical vapors or fumes that may impair the instrument's function or safety.

Ensure that the installation area is protected against environmental hazards, including moisture, direct sunlight, aggressive atmospheres, and thermal extremes. These conditions may reduce the lifespan or accuracy of the device.

The system is delivered fully pre-mounted on two or three 350 × 400 mm PVC panels. All core components - such as the NEON® ONE | CORE, the optional NEON® ONE | HUB, the STABIFLOW® ONE flow assembly, and all cabling - are pre-installed and internally wired.

ZIRKON® ONE FT (temperature and flow sensor) is always pre-installed as part of a system. The other ZIRKON® ONE sensors are selected separately and are not included as part of the standard system delivery.

The NEON® ONE | NODEs are included in the delivery but are not pre-installed. During on-site setup, each NODE must first be connected to its assigned cable and only then attached to the corresponding sensor.

The final on-site installation involves:

- Mounting the panel to a flat wall surface.
- Inserting the sensors into the STABIFLOW® ONE assembly.
- Connecting each NODE to a cable.
- Attaching the NODEs onto the sensors.
- Connecting water supply and mains power.

The installer is responsible for the correct and safe installation of the system in accordance with this manual and all applicable local standards. All connections must follow the wiring guidelines provided, and environmental conditions must be maintained throughout operation.

3.2. Mechanical Installation

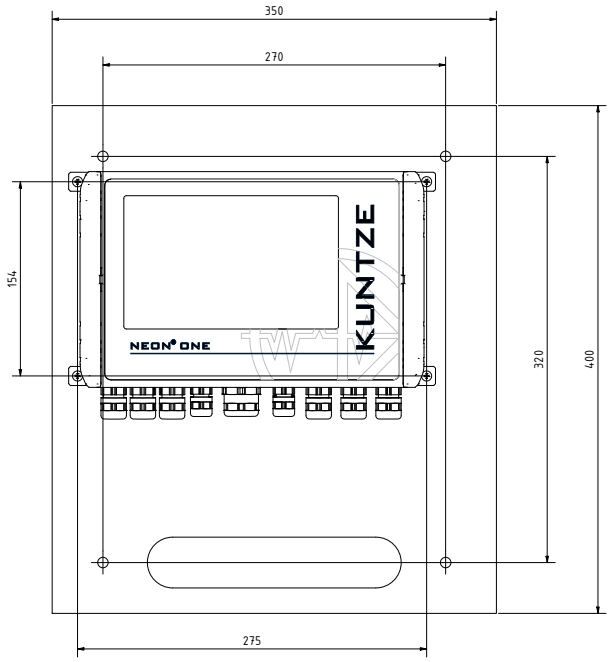
- Mount the panel on a flat, vertical wall using four screws and appropriate wall anchors.
- Mounting hole spacing: 270 × 320 mm.
- Ensure the panel is aligned vertically and mounted at a height that allows for easy access and service.

The delivery includes mounting brackets specifically designed to:

- Maintain a defined clearance between the panel and the wall, allowing cables to be routed neatly behind the system.
- Securely hold the individual PVC panel together to ensure a stable multi-panel configuration.

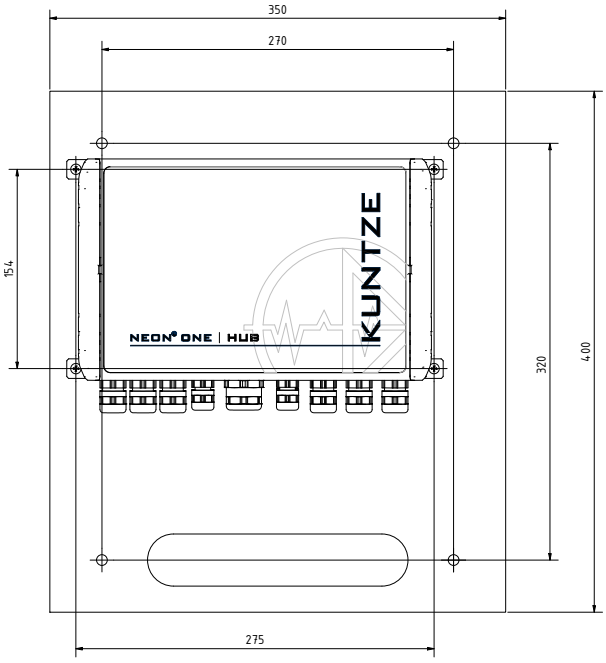
NEON® ONE | CORE mounted on the panel

Distances in mm



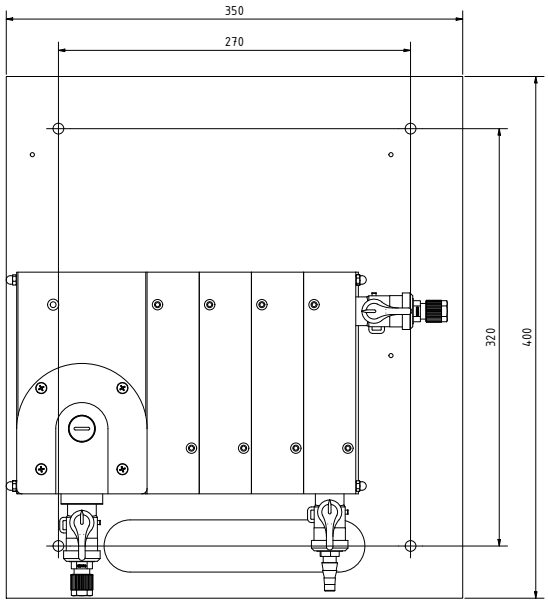
NEON® ONE | HUB mounted on the panel

Distances in mm



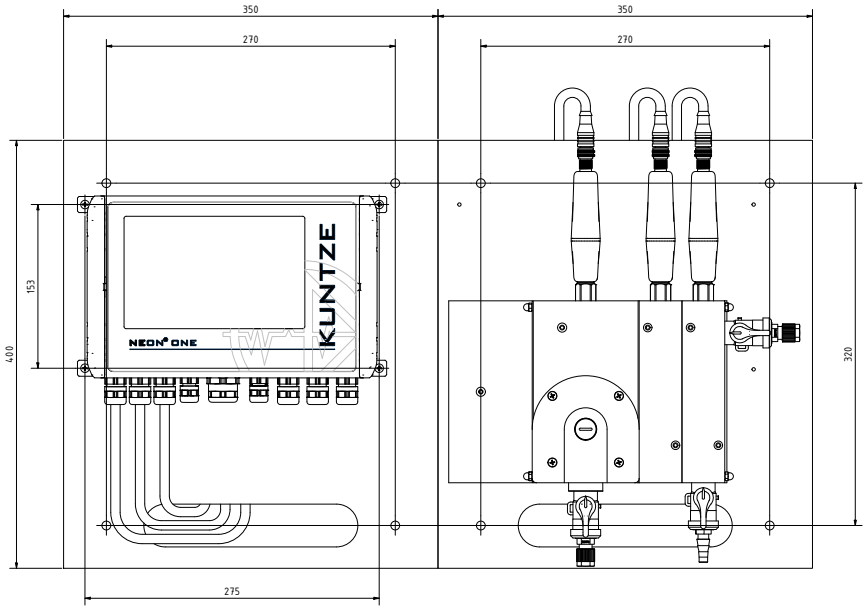
STABIFLOW® ONE mounted on the panel

Distances in mm



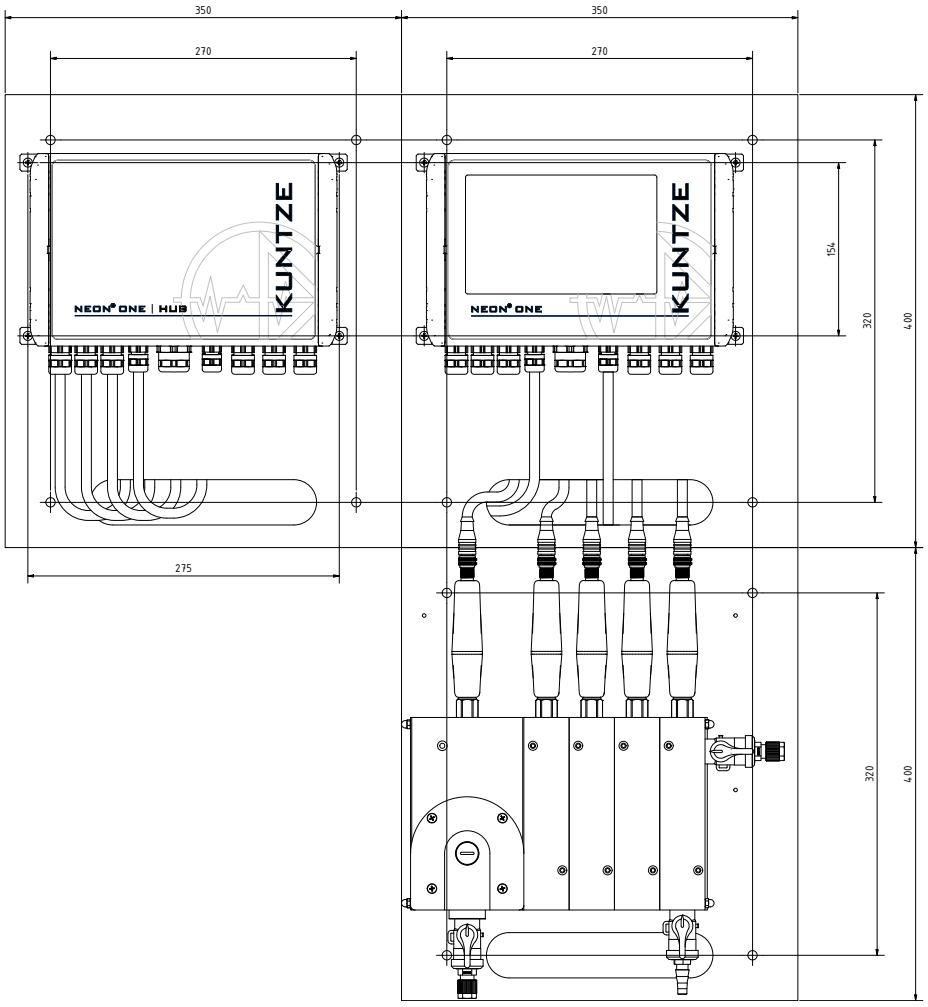
Possible arrangement of KRYPTON® ONE | COMPACT System

Distances in mm



Possible arrangement of KRYPTON® ONE | HUB System

Distances in mm



3.3. Sensor and Water Connection

- Insert the ZIRKON® ONE sensors into the threaded ports on the STABIFLOW® ONE flow assembly. O-rings are pre-installed. Hand-tighten without tools.
- Connect inlet and outlet water hoses.
- Ensure a continuous water flow with a minimum inlet pressure of 0.5 bar (between inlet and outlet) and a flow rate of at least 35 l/h to guarantee stable and accurate disinfectant measurement.

3.4. Power Supply Connection

The power supply is integrated in the NEON® ONE | CORE housing and is not user-serviceable. The protective earth (PE) conductor of the supply line must be connected to the designated PE terminal inside the enclosure. All panels are internally grounded. No external earth electrode is required, but grounding must comply with local installation codes and IEC 61010-1.

ⓘ The installer is responsible for the correct and safe installation of the system in accordance with this manual and all applicable local standards. All connections must follow the wiring guidelines provided, and environmental conditions must be maintained throughout operation.

3.5. Sensor and System Connection

3.5.1. NODE and HUB Cable Connections

ZIRKON® ONE sensor → NEON® ONE | NODE → NEON® ONE | COMPACT/ HUB

- Insert each ZIRKON® ONE sensor into the threaded port of the STABIFLOW® ONE flow assembly.
- Then connect the NEON® ONE | NODE to the designated cable and mount it securely onto the sensor head.
- The NODE cable is routed through the cable glands and connected to the NEON® ONE | COMPACT or the NEON® ONE | HUB.

ⓘ The ZIRKON® ONE DIS sensor must always be installed in the last chamber of STABIFLOW® ONE when using ASR® option (Automatic Sensor Cleaning).

NEON® ONE | CORE→ NEON® ONE | HUB (if installed)

- If a KRYPTON® ONE | HUB is used, the CAN cable is routed from the NEON® ONE | CORE to the NEON® ONE | HUB.
- The cable is screwed into the M12 socket on the HUB side to ensure a sealed and secure connection.
- Communication and power are transmitted together via this CAN-based cable.

Always route NODE and HUB cables separately from mains power lines to minimize interference.

3.5.2. LED Status Indicators on NEON® ONE | NODE

Each NEON® ONE | NODE is equipped with an integrated LED that indicates system status during installation and operation. It is highly recommended to observe the LED behavior during installation and commissioning to ensure proper configuration and functionality.

The meaning of the LED signals is as follows:

Solid green	Correct installation and configuration completed successfully.
Blinking green	Sensor connected but no communication to NEON® ONE possible.
Solid red	No sensor connected to the NODE.
Blinking red	Wrong sensor type connected to the NODE.

If the LED shows solid red, verify that a compatible sensor is physically connected. If the LED blinks red, ensure the correct sensor type (e.g., ZIRKON® ONE series) is used.

3.6. Sensor Setup / Sensor Group Definition

Before connecting sensors to the system, they must be defined within Sensor Groups. This ensures correct assignment and recognition of each measurement input.

A stream represents groups of measurements, which all describe the same water, but at different points in the process. Groups can therefore be downstream or upstream from any given reference point. Groups in different streams do not share the same source of water or sit in independent processing lines. It is possible to create a maximum number of eight streams per NEON® ONE.

Each group thereby represents a collection of measurements, which together describe the water quality. In order to do that the measurements within one group should be exposed to the same or similar water, like in a sampling point or closely located sampling points. It is possible to create a maximum number of eight groups per NEON® ONE.

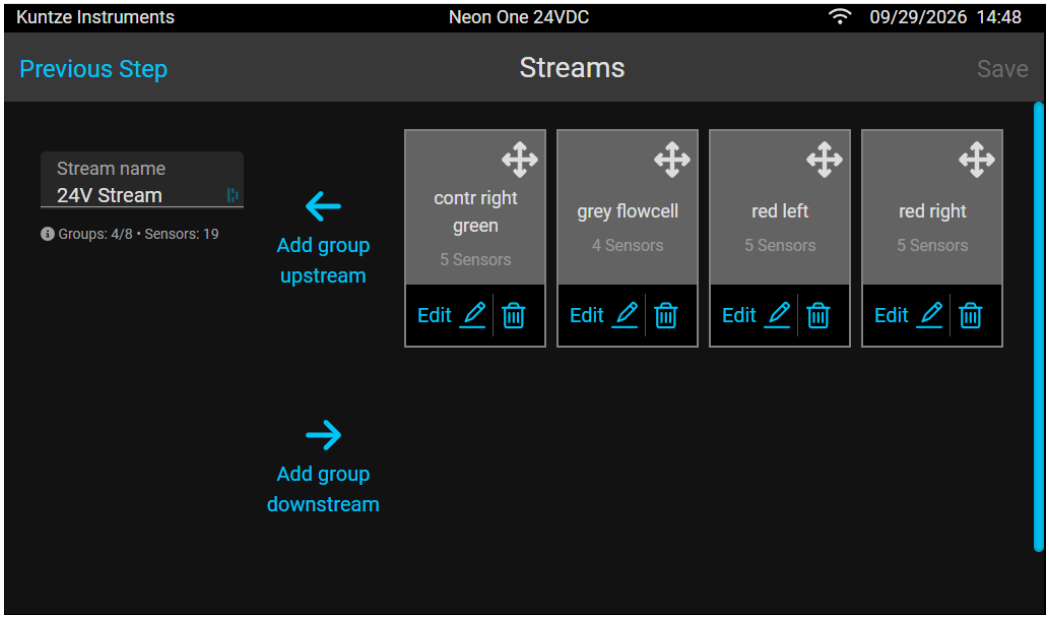
In most systems, sensor groups are preconfigured prior to delivery. However, if the message "Sensor not recognized" appears during connection, or when a new sensor is added (including via analog input), manual group definition is required.

Only users with Service-level access can create or modify sensor groups.

How to Create or Edit Sensor Groups in a Stream

> Correct group configuration is required for successful sensor detection and system operation.

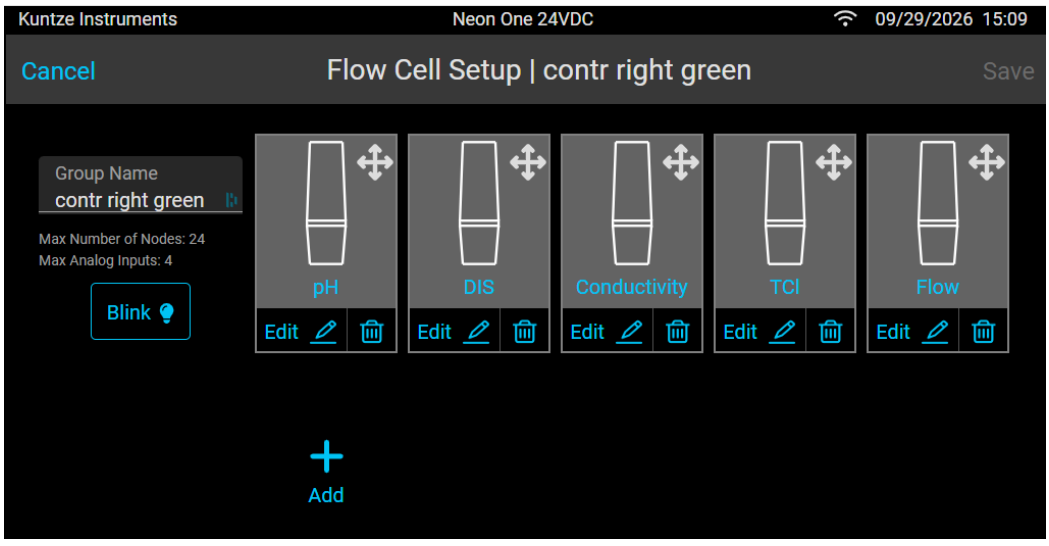
Navigate to: Menu → NEON® ONE Settings → Sensor Setup



On the left, assign a stream name and view the system-defined limits for:

- Available number of groups and max. number of groups
- Number of connected sensors

Press "Add group (up-/downstream)" to define a new group in the stream. Press "Edit" to access the definition menu of the individual groups.



On the left, assign a group name and view the system-defined limits for:

- Max. number of NODEs
- Max. number of analog inputs

Press "Add" to define a new sensor or analog input. Select the corresponding measurement type or analog input channel. After all sensors have been added, press "Done", then "Save" (top right corner) to finalize the group.

Define and connect group after group (safest way) or you define the groupings and connect them from left to right.The communication/ cable has no localization and connecting them one after another is the only way to ensure the right assignment of sensor and NODE.

You can check the assignment with the “blink” function in the group overview

When all sensors in all groups have been added and configured save the configuration to exit the menu.

When deleting a group, all setting related to that group are also deleted. This is a mandatory safety function to avoid accidental misconfigurations.

3.7. CAN Bus Interface and Cable Limits

- Maximum total CAN cable length (including NODEs and HUB): 500 m.
- Only original NEON® ONE | CAN cables must be used.
- CAN bus termination resistors are factory-installed as required.

3.8. Cooling and Noise Emission

- The system operates without ventilation fans and is cooled by natural convection.
- The device generates no measurable sound pressure and does not require acoustic shielding.

3.9. Hardware Modules

Depending on the configuration, the system may contain one or more integrated hardware modules for various input and output functions. These modules are installed at the factory and may include combinations of the following:

- Analog input modules
- Analog output modules
- Digital input modules
- Digital output modules
- Relay output boards (mechanical or solid state)
- NODE input modules
- I/O board (main interface for sensor signal routing and control output)

Each module is clearly labeled and assigned to specific terminals inside the housing. The quantity and type of modules depend on the system configuration.

Users are free to decide which module functions to use. Signal assignment and wiring must be carried out by the system integrator during installation.

All modules are pre-installed. Connection terminals are clearly marked directly on the module board.

3.9.1. Safety Instructions for Module Replacement or Expansion

If modules need to be replaced or added, the following safety guidelines must be observed:

- All work must be carried out by qualified and electrically trained personnel.
- The device must be disconnected from the power supply before opening the housing.
- Observe all requirements of DIN EN IEC 61010-1, including:
  - Protection against electric shock
  - Compliance with clearance and creepage distances
  - Reinstallation of protective covers
- Only original NEON® ONE hardware modules may be used to maintain compatibility.

3.9.2. Overview of Available Hardware Modules

I/O Board	Central interface board for signal routing, communication, and module coordination.	• Handles data exchange between system components • Connects to NODE modules and I/Os • Power distribution and bus interface integrated
NODE Input	Reads and digitizes sensor signals for internal system communication via CAN.	• Versions with 2..6x inputs • Compatible with NEON® ONE | NODE • Signal forwarding to I/O Board via CAN
Digital Output	Provides digital switching signals to external connections.	• 8x outputs (open collector) • Max. frequency: 50 Hz • Galvanically isolated
Digital Input	Records digital signals from external sources.	• 8x inputs (open collector) • Max. frequency: 50 Hz • Trigger: High >3.3 V / Low <2 V • Galvanically isolated

Analog Output 4x	Provides analog current signals for external systems.	• 4x outputs • Range: 0/4..20 mA • Max. load: 500 Ω • Galvanically isolated
Analog Input 4x	Acquires analog current signals for further processing.	• 4x inputs • Range: 0/4..20 mA • Galvanically isolated • Compatible with current loop, 3-wired & 4-wire sensors
Analog Input 2x	Compact version with two analog current inputs.	• 2x inputs • Range: 0/4..20 mA • Separate Galvanic isolation per input • Compatible with 2-wire (also current loop) & 4-wire sensors
Analog Output 2x	Space-saving module with two analog current outputs.	• 2x outputs • Range: 0/4..20 mA • Max. load: 500 Ω • Separate Galvanic isolation per output
Relay Board – Mechanical	Relay module with mechanical contacts for switching signals.	• Max. voltage: 250 V AC/ DC • Max. current: 6 A per relay / 8 A total • For resistive and inductive loads • 4x SPDT relays
Relay Board – Solid State	Relay module with solid-state components for contactless switching.	• 4x SPST relays • Max. voltage: 250 V AC • Max. current: 3 A • Wear-free operation

3.9.3. Connection Overview

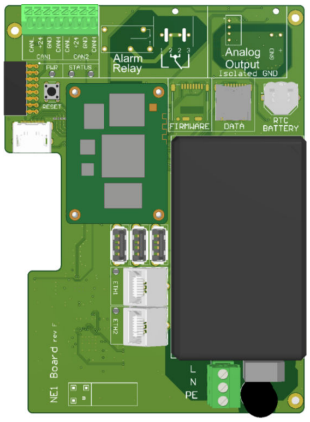
This section provides a clear explanation of the terminal abbreviations and hardware labels found on NEON® ONE system I/O modules. It is intended to support flexible configuration and correct electrical connection. All modules are pre-labeled, but for user clarity and safety, the table below lists each abbreviation along with its meaning and function.

> ⚠ For detailed instructions on wiring and electrical safety, refer to the installation chapter of this manual.

Terminal Reference Table

GND	Ground	Common reference point for electrical circuits (negative pole or earth connection)
+24V / 24V_YE	+24 Volt Supply (Yellow)	24 V power supply input for NEON® ONE internal power
CANH / CANL	CAN High / CAN Low	CAN-Bus communication lines (differential signaling) for data exchange between modules
TERM	Termination	Switchable 120 Ω termination resistor for CAN or Modbus bus systems
Modbus A / B	Modbus Interface A / B	RS485-based differential signal lines for Modbus communication (optional)
ALARM RELAY	Alarm Relay	Potential-free contact to signal alarms or system warnings (optional)
DATA FIRMWARE RTC BATTERY RESET	Data Ports / Firmware / Battery	Service-related connectors for updates, memory cards, or internal RTC support
PE	Protective Earth	Grounding terminal (green / yellow), used for system safety
N / L	Neutral / Line (AC Mains)	230 V AC mains connection: N=Neutral, L=Phase
2AT	2A Slow-Blow Fuse	Fuse protection for relay output channels
I/O Slot X	Input / Output Slot	Slot positions for inserting functional modules (Analog or Digital)
Relay X	Relay Output Channel	Switching relay for external loads like pumps, valves, contactors
NODE 1..6	NODE Channel	Dedicated input for NEON® ONE | NODE – connects ZIRKON® ONE sensors via CAN-based cable

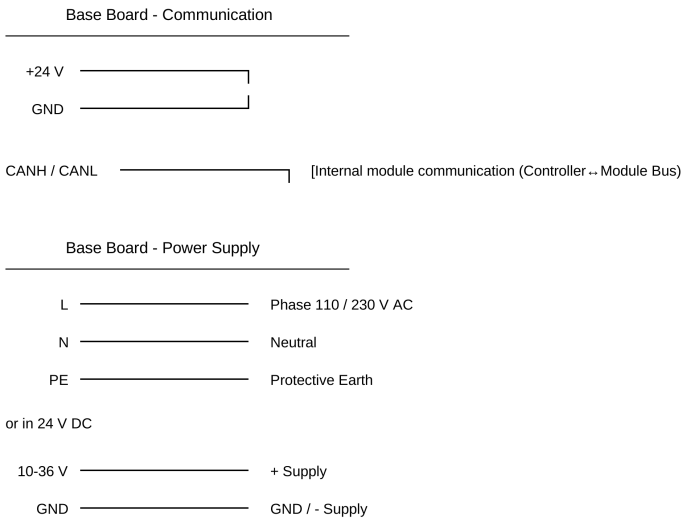
3.9.4. NEON® ONE | Board



Terminal Abbreviations – NEON® ONE | Board

+24V / 24V_YE	24 V DC Power	Supplies internal bus and connected modules.
GND	Ground	System ground reference.
CANH / CANL	CAN Bus High / Low	Module communication line (NEON® ONE ↔ Modules).
STATUS LED	Status Indicator	Shows operating status or error codes.
PWR LED	Power Indicator	Shows operating status.
RTC BATTERY (CR1220)	Real-Time Clock battery	Keeping time and date and saving hardware configurations.
ETH	Ethernet	Connection port to LAN or use as daisy chain.
L	Line Voltage Input	Supplies voltage to COM terminals via fuse.
N	Neutral Terminal Block	Installer aid - for connecting neutral of loads.
PE	Protective Earth Terminal Block	Installer aid - for connecting PE of loads.
2 AT Fuse	2A Slow-Blow Fuse per channel	Protects the output channel; mandatory for operation with active voltage.

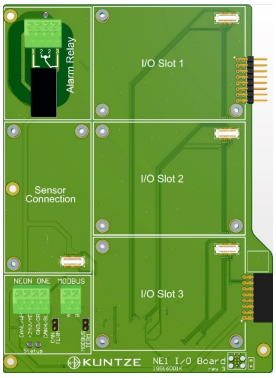
Wiring Diagram



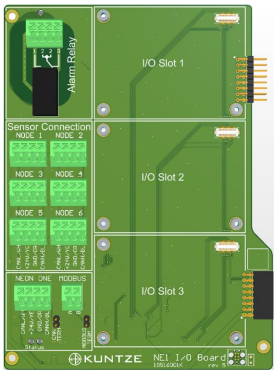
Additional Notes

- Always disconnect mains power before servicing or wiring!
- NEON® ONE | Board supports up to two CAN ports, two Ethernet ports, and a LNPE port.

3.9.5. NEON® ONE | I/O Board



Old version of NEON® ONE | I/O Board

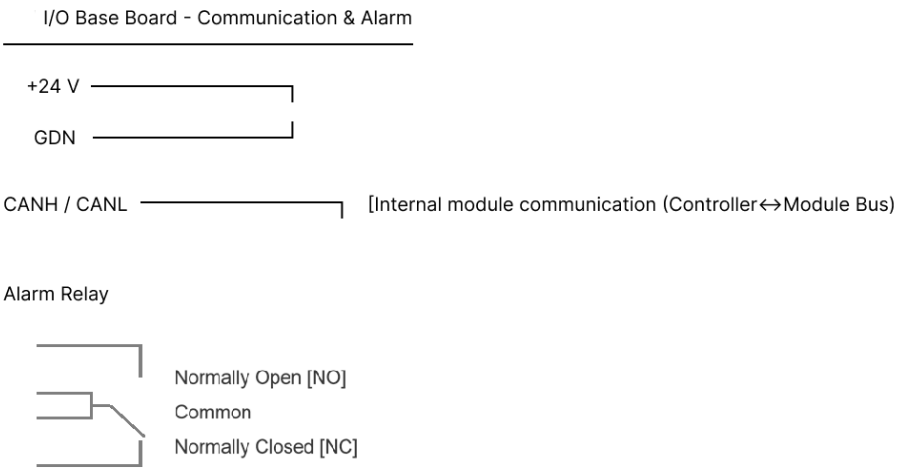


New version of NEON® ONE | I/O Board

Terminal Abbreviations – NEON® ONE | I/O Board

+24V / 24V_YE	24 V DC Power	Supplies internal bus and connected modules
GND	Ground	System ground reference
CANH / CANL	CAN Bus High / Low	Module communication line (NEON® ONE ↔ Modules)
TERM	Termination Resistor	Enables 120 Ω termination for CAN bus (only active at the end of the bus chain)
I/O Slot 1..3	Module Slots	Plug-in positions for I/O analog or/and digital modules
STATUS LED	Status Indicator	Shows operating status or error codes
ALARM RELAY	Alarm Relay Output (SPDT)	System-wide alarm output (potential-free changeover contact – COM/NO/NC)

Wiring Diagram

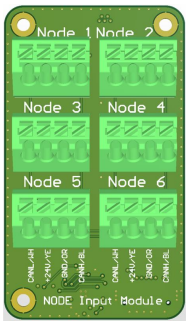


Additional Notes

- Do not connect external sensors directly to this board. Signal connections are made via the installed modules.
- Alarm relay can be used to drive external warning systems, e.g., lamps, sirens, or input to higher-level systems.
- Modbus is optional and not active in all configurations – only use when enabled by firmware/hardware.
- Ensure correct orientation and firm fit when plugging modules into I/O Slots.
- New I/O Board supports up to six NEON® ONE | NODEs

Start connecting the NODE cables to the lower connectors first for a clean and easy installation.

3.9.6. NEON® ONE | NODE Input



Terminal Abbreviations – NEON® ONE | NODE Input

CANL_WH	White	CAN Bus Low (communication)
+24V_YE	Yellow	Power supply 24 V DC
GND_OR	Orange	Ground reference
CANH_BL	Blue	CAN Bus High (communication)

Additional Notes

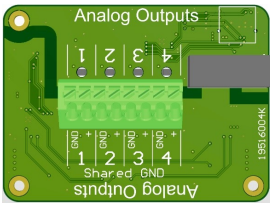
- Supports up to six NEON® ONE | NODEs
- In new systems, the module is integrated directly on the I/O board.
- Cables should be routed separately from power lines to avoid interference
- Use only original shielded CAN cables

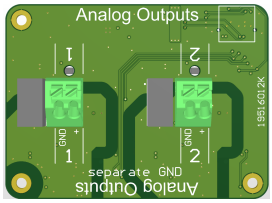
Start connecting the NODE cables to the lower connectors first for a clean and easy installation.

3.9.7. NEON® ONE | Analog Output

Two versions are available:

- 4-channel module (shared ground)
- 2-channel module (fully galvanically isolated channels)

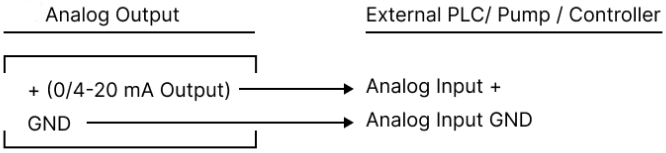




Terminal Abbreviations – NEON® ONE | Analog Output

+	Analog Output Signal (0/4..20 mA)	Active current output
GND	Ground	Shared or isolated, depending on module

Wiring Diagram



Additional Notes

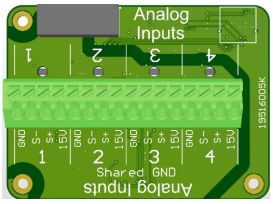
- The analog signal is current-based (0..20 mA or 4..20 mA depending on configuration).
- Outputs are configurable via the NEON® ONE interface under *mA Outputs*.
- Wiring must be separated from high-voltage lines to prevent signal interference.
- Polarity must be respected. Reversed connections can prevent proper signal transmission.

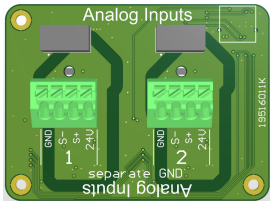
3.9.8. NEON® ONE | Analog Input

Two versions are available:

- 4-channel module (shared ground)
- 2-channel module (fully galvanically isolated channels)

> Use the 2-channel version when independent signal paths or isolated systems are required (e.g., avoiding ground loops or differential grounding).

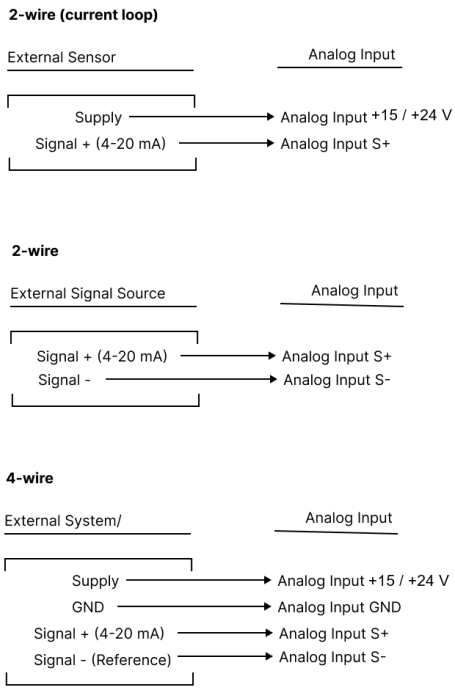




Terminal Abbreviations – NEON® ONE | Analog Input

S+	Analog Signal Positive	+ Connection of 0/4..20 mA sensors
S-	Analog Signal Negative	- Connection of 0/4..20 mA sensors
GND	Ground	Shared or isolated, depending on module
+15 V / +24 V	Max. Supply Voltage	Provided directly by module

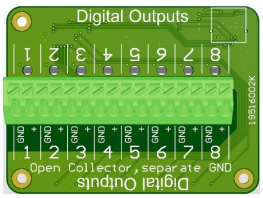
Wiring Diagram



Additional Notes

- Signal type is configurable via the NEON® ONE interface under Analog Inputs.
- Sensor power (+15 V / +24 V) is supplied via the module for supported sensor types.
- Signal shielding and clean cable routing are essential to minimize noise.
- Polarity must be respected. Reversed connections can prevent proper signal transmission.

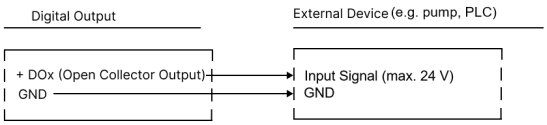
3.9.9. NEON® ONE | Digital Output



Terminal Abbreviations – NEON® ONE | Digital Output

+	Digital Output (Open Collector)	Switches to GND when active
GND	Ground	Each output has its own isolated GND

Wiring Diagram

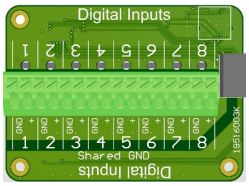


Additional Notes

- Type: Open Collector (NPN)
- Max. switching voltage: 24 V DC
- Max. switching current: 30 mA per channel
- Triggered directly by controller logic, configured in NEON® ONE interface

Ensure external loads are compliant with current/ voltage limits. For inductive loads, use protective diodes or external relays to avoid damage.

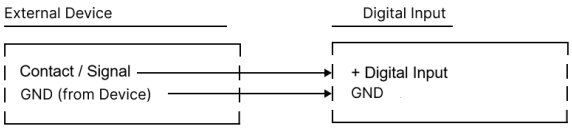
3.9.10. NEON® ONE | Digital Input



Terminal Abbreviations – NEON® ONE | Digital Input

+	Signal Input Terminal	Accepts 12 V logic or pulse input (e.g., flow meter)
GND	Ground	Connect to the signal reference of the source

Wiring Diagram



Additional Notes

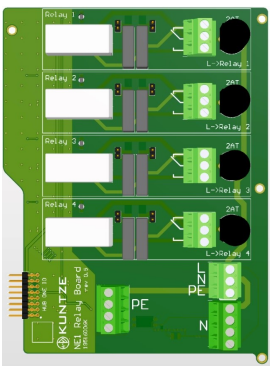
- Trigger type: Open Collector, active when the signal is pulled to ground.
- Max. input frequency: 50 Hz.
- Assignment type is configurable via the NEON® ONE interface under Digital Inputs.

3.9.11. NEON® ONE | Relay Board

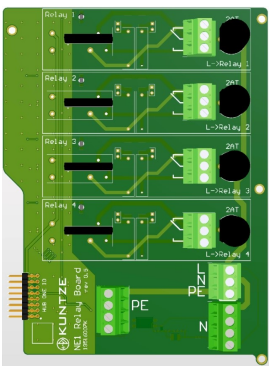
Two relay board versions are available:

- Relay Board – Mechanical (4×)
- Relay Board – Solid-State (4×)

Each board offers four relay channels. All relays are controlled via the NEON® ONE platform. The wiring and capabilities differ slightly between the two versions and are explained below.



NEON® ONE | Relay Board – Mechanical (4×)

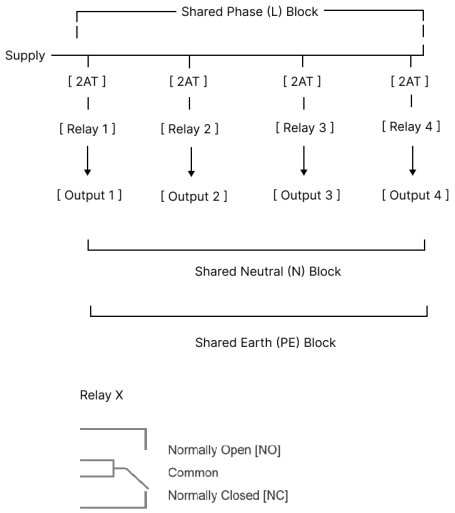


NEON® ONE | Relay Board – Solid-State (4×)

Terminal Abbreviations – NEON® ONE | Relay Board

COM	Common Contact	Central connection point for each relay channel. Becomes live if L + fuse are connected.
NO	Normally Open	Switched contact – closes when the relay is activated.
NC	Normally Closed	Switched contact – opens when the relay is activated
L	Line Voltage Input	Supplies voltage to COM terminals via fuse (makes relay “powered”).
2AT Fuse	2A Slow-Blow Fuse per channel	Protects the output channel; mandatory for operation with active voltage.
N	Neutral Terminal Block (4× shared)	Installer aid – for connecting neutral of loads.
PE	Protective Earth Terminal Block (4×)	Installer aid – for connecting PE of loads.
Relay 1..4	Output Channels	Each relay has its own COM, NO, and optionally NC terminal.

Wiring Diagram



Each relay output is factory-equipped with a 2AT slow-blow fuse installed per channel. When line voltage (L) is connected to the relay board, and the fuses are present, the common (COM) terminals of all relays become live (carry the applied AC voltage, typically 230 V AC). This means that the relays are no longer potential-free but instead switch the supplied voltage directly to the load.

If potential-free (dry contact) switching is required, the fuses must be removed manually. In this case, the relay contacts remain isolated and can be connected to any desired voltage externally, independent of the board’s L input.

	Mechanical Relay	Solid-State Relay
Switching Type	AC and DC	AC only
Switching Speed	Slow (max. 2 Hz)	Fast, wear-free
Contact Wear	Yes, mechanical components	No, solid-state switching
RC Circuit	Installed, active (jumpered)	Not installed or required
Required Connections	L, N, PE, Fuse	L, N, PE, Fuse are mandatory

Solid-State Relays must not be used for DC switching. This can cause malfunction or damage.

Additional Notes

- Always connect L, N, PE and the 2AT fuses for proper relay operation.
- The RC snubber circuit on mechanical relays is pre-installed and activated by default (both jumpers set) to protect the contacts from switching surges.
- Solid-State relays do not require RC circuits and come without them installed.
- The N and PE terminal blocks on the board allow convenient wiring of the other two wires of the connected device – no external terminal blocks are needed.

Additional Safety Instructions

- Always disconnect mains power before servicing or wiring.
- Do not mix AC and DC loads on the same relay board.
- Ensure proper fuse protection per channel.
- Maintain 10 mm separation between power and signal wiring.
- Use appropriate wire gauge (1.5..2.5 mm²) for the expected current load.

4. Operation

4.1. Operating Interface and Controls

The NEON® ONE is equipped with an intuitive capacitive touchscreen interface. The system displays real-time measurement data and provides full access to configuration menus via modern icon-based navigation. All core functions are accessible via a structured main menu, with visual icons and text-based navigation.

User access is secured via PIN codes and categorized into different permission levels.

> Software layouts, icons, and exact menu structures may change without prior notice as part of continuous product improvements.

The information in this manual focuses on operational principles, not on specific screen layouts.

Interaction Logic and Navigation Tips

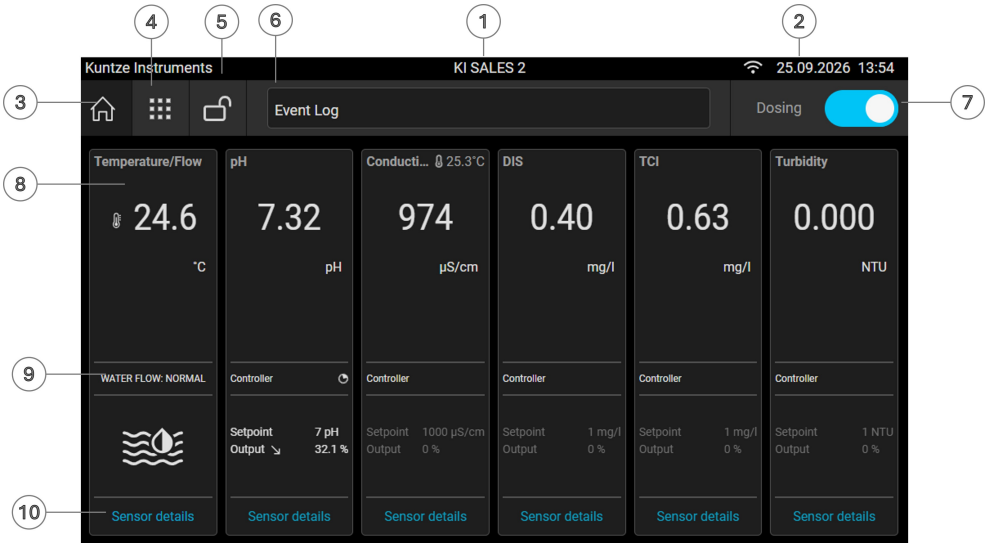
- In the NEON® ONE interface, active (available) functions are highlighted in blue. Inactive (unavailable) functions appear greyed out. The availability of menu items may vary depending on the user role (e.g., Read Only, Technician, Manager, Service).
- Blue-highlighted values indicate editable fields. Touch the value directly to open the corresponding edit menu.
- After making adjustments, press "Save" to apply the changes. To discard changes without saving, press "Back".
- After a successful change, a confirmation message will appear to inform the user that the operation has been completed.

4.1.1. Start Screen Overview

When powered on, the main screen displays the following:

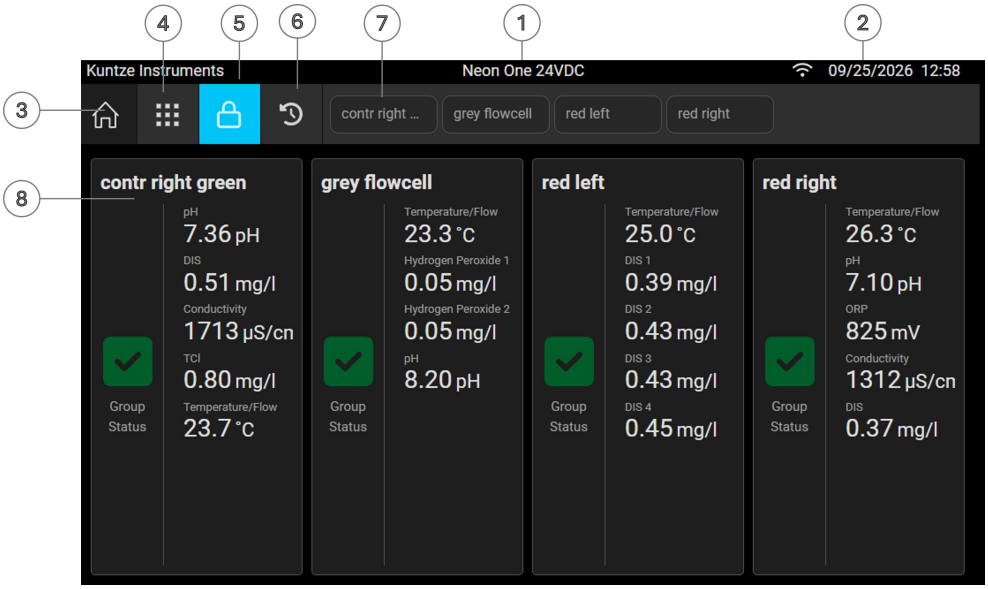
- Home screen
  - Without groups: One tile per connected sensor showing the live measured value (e.g., DIS, TCl, pH, conductivity, turbidity, temperature/ flow). Controller setpoint and output are shown when a controller is active. A “Dosing” toggle switch (top right; displayed only if a controller has been configured in the system settings).
  - With groups: Group overview showing all sensor groups with group name, group status and the live measured values of each sensor in the group.
- Navigation bar with [Home], [Main Menu], [Back] and [Event Log].
- Current date and time.
- Group tabs: Select a group to open the group view (only if groups are configured).
- Group view: One tile per sensor showing live measured value, limit range, controller setpoint and output, with a dosing on/off switch.

Home screen without groups



1	Device Name	Displays the configured device name (Example: "KI Sales 2").
2	Date & Time	Shows the current date and time according to the device's internal clock.
3	Home	Returns directly to the main live measurement overview.
4	Main Menu	Opens the full main menu structure for system configuration and access to settings.
5	Login / Access Control	User Login/Logout menu to switch roles. Access is protected via PIN codes.
6	Event Log	Opens the Event Log displaying alarms, system messages, warnings, and historical events.
7	Dosing Toggle	Activates or deactivates manual dosing operation (only visible if a dosing controller has been configured).
8	Live Measurement Values	Displays real-time readings for each sensor connected.
9	Controller Information	Shows controller settings such as active setpoints, controller output (%), and whether control functions are active.
10	Sensor Details	Each sensor panel includes a "Sensor details" button for access to extended sensor information, settings, diagnostics, and calibration functions.

Home screen with groups



1	Device Name	Displays the configured device name (Example: "Neon One 24VDC").
2	Date & Time	Shows the current date and time according to the device's internal clock.
3	Home	Returns directly to the group overview.
4	Main Menu	Opens the full main menu structure for system configuration and access to settings.
5	Login / Access Control	User Login/Logout menu to switch roles. Access is protected via PIN codes.
6	Event Log	Opens the Event Log displaying alarms, system messages, warnings, and historical events.
7	Group Name	Opens the detailed view of each group.
8	Group Tile	Each group tile shows live measurements and group status.

4.1.2. Access Control and User Login

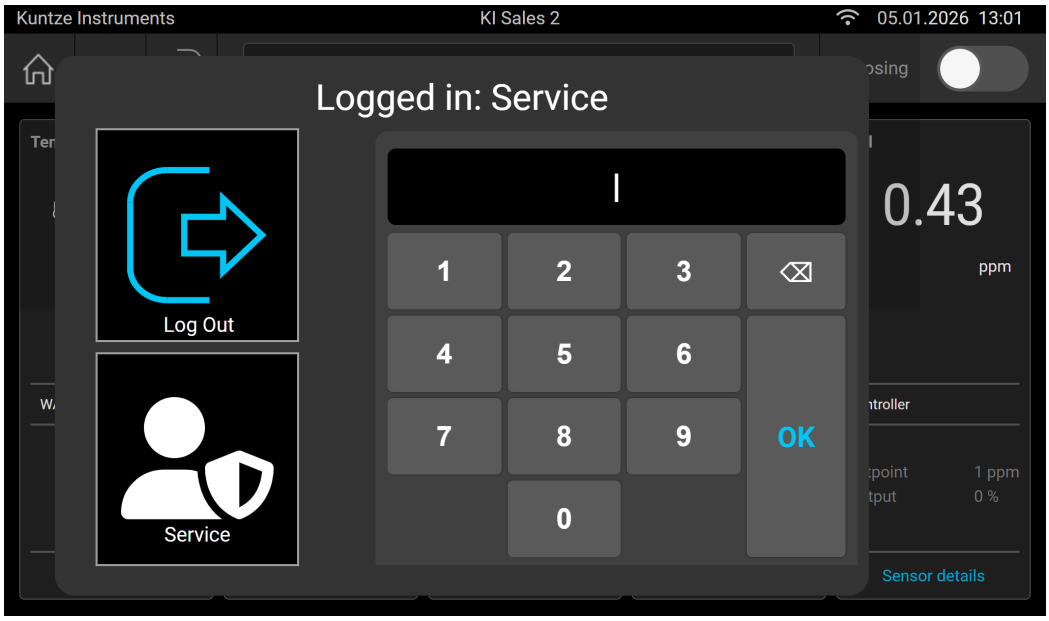
The NEON® ONE platform provides a role-based access control system to protect system integrity and ensure that only authorized users can perform sensitive operations. When the system is locked, users must log in via a numeric keypad and select their access role.

Codes and Roles

0000	Read Only	View-only mode. Users can see measurement values and alarms, but cannot change any settings.
0202	Technician	Allows calibration, sensor diagnostics, basic alarm setup, and service functions.
1612	Manager	Grants access to hardware settings, module configuration, and system maintenance tools.
1818	Service	Full administrative access: User management, remote access setup, I/O configuration, and all system-level operations.

The codes for the different roles can be customized.

Each role is protected by a separate access code, which must be entered during login. The current login role is shown in the top bar.



Functions of the Login System:

- Users select a role and enter the corresponding code
- After successful login, role-specific menus and actions become available
- Roles can be changed at any time via the Login/Logout menu
- A timeout mechanism returns the device to locked state after inactivity
- Incorrect login attempts are limited to prevent unauthorized access

Only qualified personnel should be assigned the Service or Manager roles. Access credentials must be protected against unauthorized use.

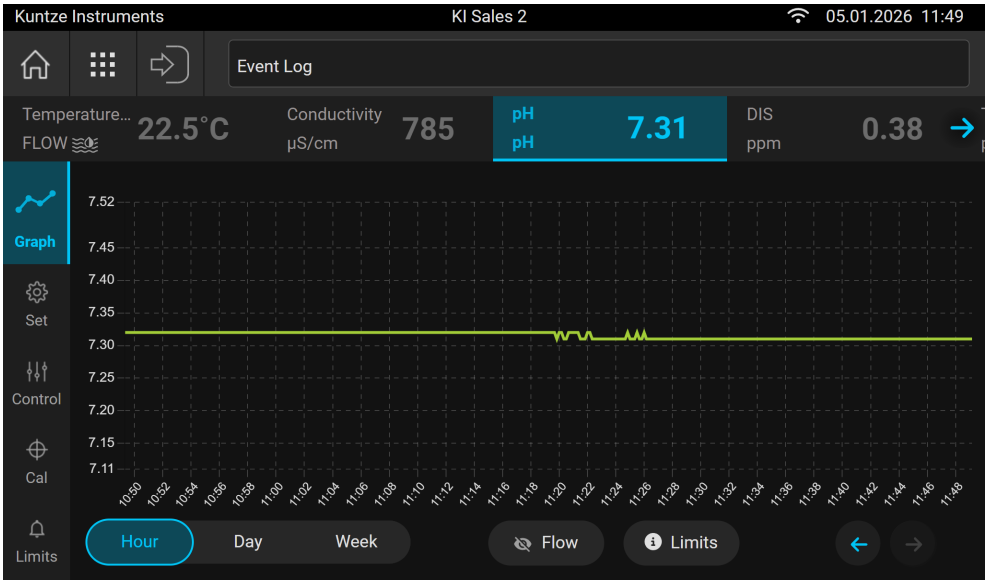
4.1.3. Sensor Detail Overview

In the Sensor Details view, users can access detailed information about each individual sensor connected to the NEON® ONE system. This includes live measurements, historical data trends, control settings, calibration functions, and configuration of alarm limits. The information is organized in tabs for easy navigation.

At the top of the screen, users can quickly switch between different connected sensors to view or configure their respective data and settings.

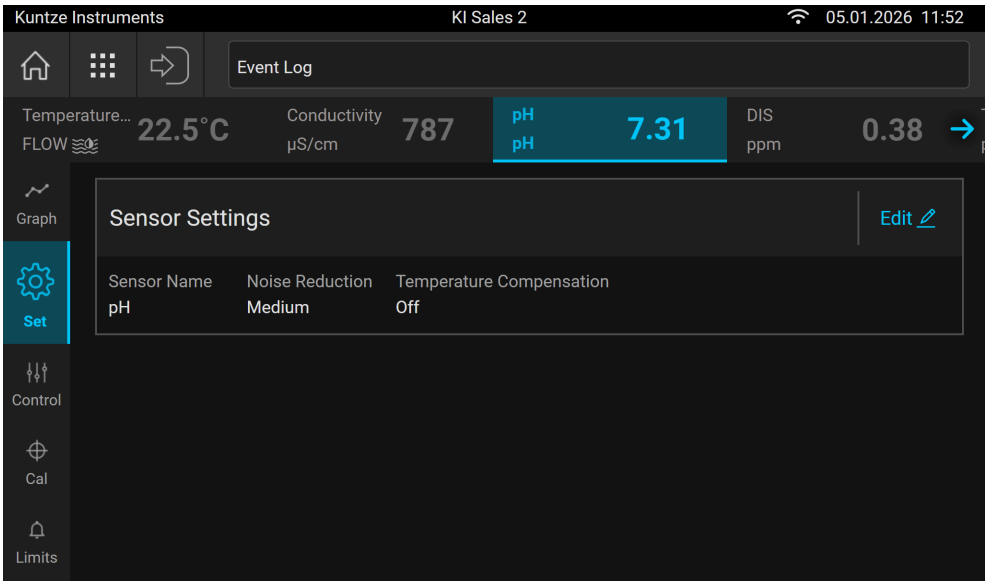
Graph

The screenshot shows the Graph tab within the Sensor Details screen, displaying a historical trend of measured values over time. You can view the data by hour, day, or week and switch between different sensors or navigate to flow and limit settings.



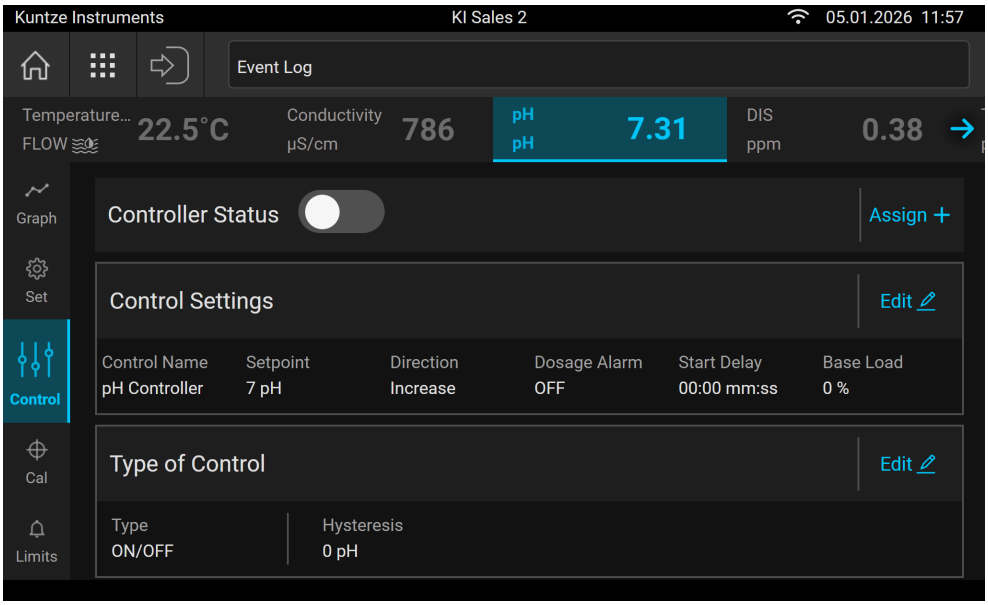
Set – Sensor Settings

In the Set tab, users can view and adjust basic sensor settings. Pressing "Edit" allows modification of these parameters to optimize the sensor's behavior based on application needs.



Control – Controller Settings

In the Control tab, users can assign, configure, and activate controllers for each sensor.



Adjustable parameters include:

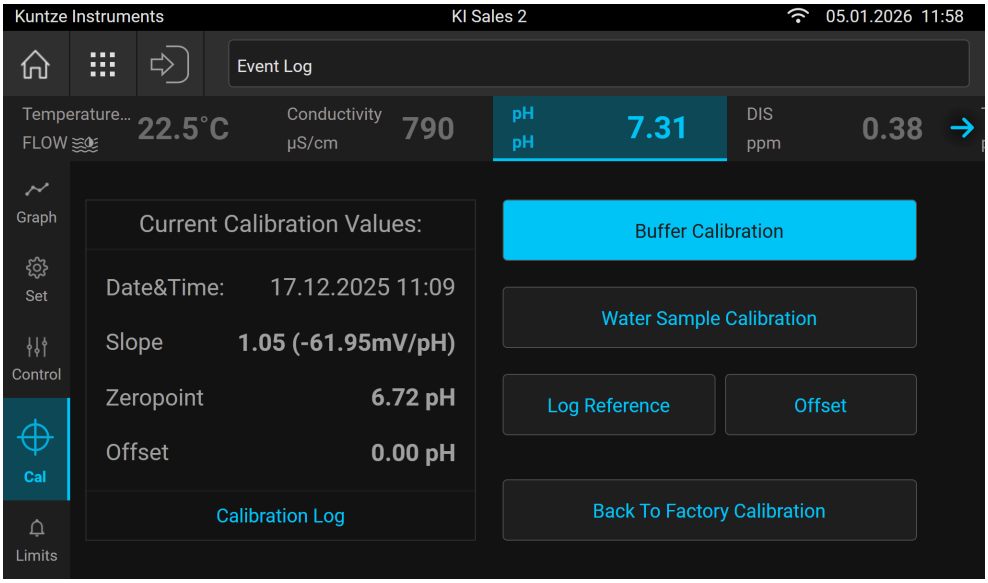
- Controller Status (ON/OFF)
- Setpoint and Direction (Increase/Decrease)
- Base Load, Start Delay, Dosage Alarm
- Control Type (e.g., ON/OFF, PID) with corresponding settings like Hysteresis

Settings can be edited directly via the "Edit" button for each section.

Cal – Calibration Settings

The Calibration tab displays the current calibration values for the selected sensor, including:

- Date & Time of the last calibration
- Slope, Zero Point, and Offset values



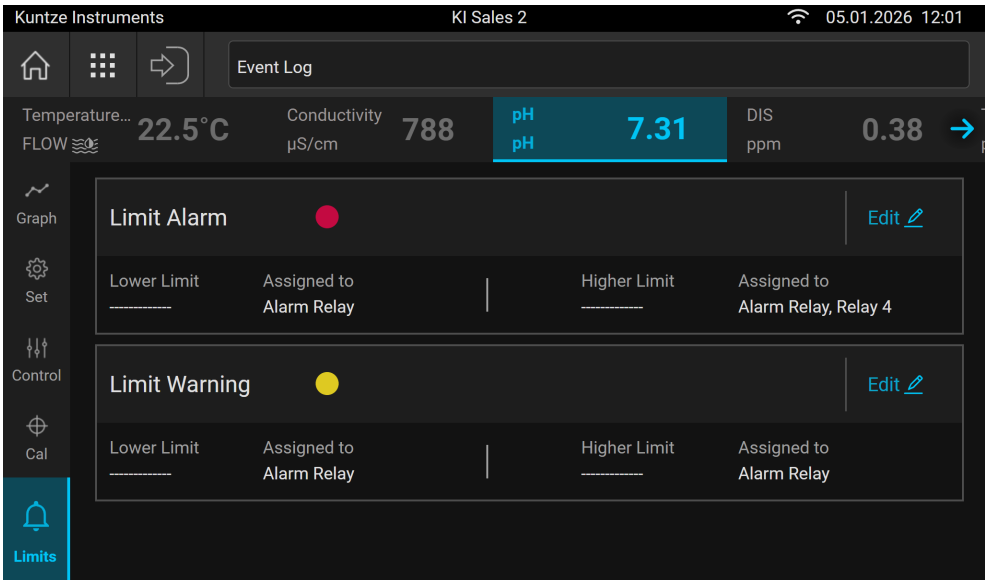
Available options:

- Water Sample Calibration: Start a guided calibration using a known reference solution.
- Zero Point Calibration: Recommended for applications involving very low concentrations, to improve accuracy near the lower detection limit. Only available for specific sensor types.
- Log Reference: Store a reference measurement value in Cloud Connect® for comparison and validation, without performing a calibration.
- Offset Adjustment: Manually correct the measurement value by applying a constant offset to align with a known reference.
- Back to Factory Calibration: Reset to original factory calibration settings.

During the calibration process, an interactive guide will appear. Depending on the sensor type, either a buffer calibration or a water sample calibration will be required.

Limits – Alarm and Warning Settings

The Limits tab allows configuration of alarm and warning thresholds for each sensor.



You can define:

- Limit Alarm (red indicator): Critical threshold breach.
- Limit Warning (yellow indicator): Early warning for potential threshold exceedance.

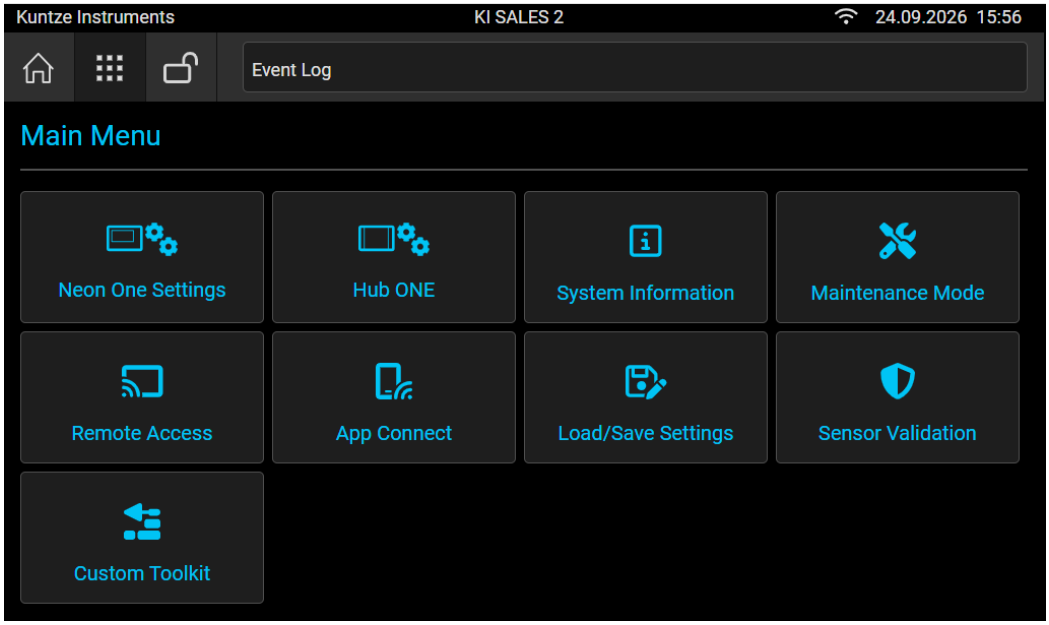
Each limit can be assigned to a connected Alarm Relay for external signaling (e.g., alarm lights or sirens). Both Lower and Higher Limits can be configured individually.

By selecting "Edit", thresholds can be adjusted directly.

A visual alert in the Event Log and relay activation occurs when measured values fall outside the set limits.

4.1.4. Main Menu Overview

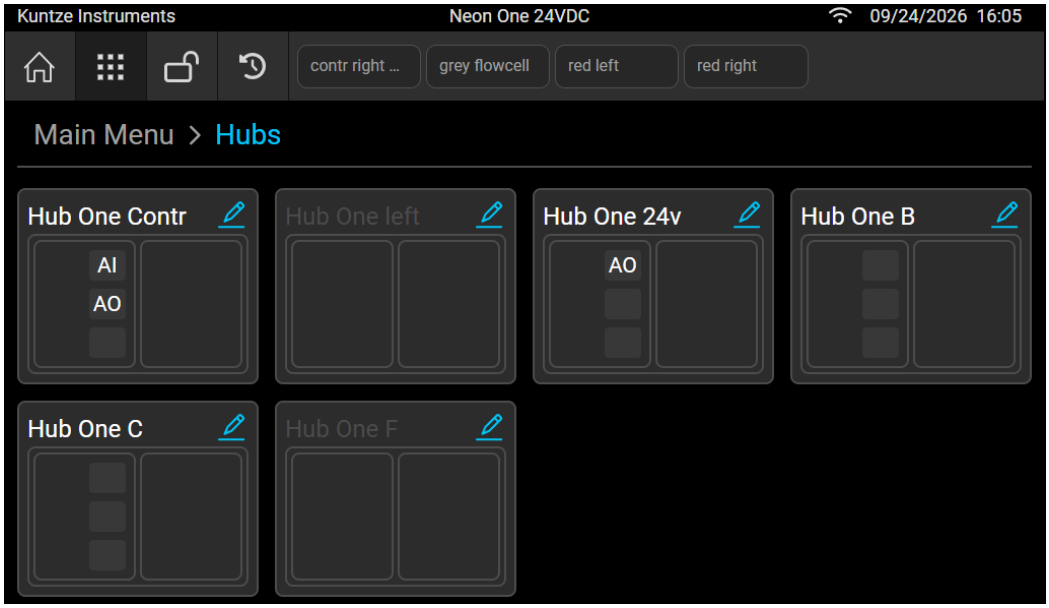
Accessible via the main navigation bar, the Main Menu contains all relevant system functions.



Neon One Settings	Access to basic system configurations such as language, date/time, network, user roles, and software updates. Some options are role-restricted and may appear inactive.
Hub ONE	Assign and configure I/O modules (analog/digital inputs/outputs, relays).
System Information	View firmware version, device ID, runtime statistics.
Maintenance Mode	Enable/disable maintenance status for safe servicing.
Remote Access	View status or set up cloud access and remote control in local network.
App Connect	Enables local connection to the NEON® ONE via Wi-Fi access point. After activation, the user can scan two QR codes to pair the device with the NEON® ONE device. This allows live monitoring and configuration from a mobile device.
Load/Save Settings	Backup or restore system configurations.
Sensor Validation (optional Add-on)	Perform sensor verification procedures.
Custom Toolkit (optional Add-on)	Access optional custom utilities, varies per configuration.

4.1.5. HUB Configuration: Input and Output Assignment

Under "Hub One", you can configure all I/O modules installed in the NEON® ONE. If multiple NEON® ONE | HUBs are connected, first select the HUB you want to configure. The edit allows renaming and resorting of the HUBs in the display, the tiles of the HUBs also indicate the installed hardware modules in each enclosure. To open a module's settings, simply click on the module tile – you will then be guided through the available configuration options.



- Assign controller to specific outputs.
- Configure outputs such as analog signals, digital pulses, or relay switching.
- Label channels for easy recognition.
- Set scaling, inversion, or fail-safe behavior.
- Only available ports are shown (depending on the installed module types).

Each port and module is clearly labeled on-screen and on the physical hardware.

4.1.6. Add-on Modbus TCP

Modbus TCP is a communication protocol used for industrial automation systems to exchange data over Ethernet networks. It is a variant of the traditional Modbus protocol, adapted for TCP/IP communication.

In Modbus TCP, a client-server model is used:

- The client (typically a control system like a PLC or SCADA) sends requests.
- The server (NEON® ONE) responds to those requests.

Because it runs on standard Ethernet, Modbus TCP allows easy integration into existing networks and supports faster, more reliable communication compared to older analog or serial-based protocols.

General Characteristics

Transmission Format: PDU, slave only.

Data Format:

- All data is encoded in Big Endian format.
- Floating point numbers are encoded using the IEEE 754 standard.
- Strings are encoded as ASCII characters, with one byte per character. Strings end either when a 0x00 is encountered or the data structure length is reached (See data types).
- Temperatures are always expressed in degrees Celsius.
- This manual refers to the structure version 4

Data Types

Type	Description	# of Registers	# of Bytes
U16	Unsinged Integer, 16 bit	1	2
U32	Unsinged Integer, 32 bit	2	4
U64	Unsinged Integer, 64 bit	4	8
F32	Float, 32 bit	2	4
String	ASCII	Variable	Variable
Array U8	Array of 8 bit unsigned values	Variable	Variable

Supported Functions

Modbus TCP Function	Name	Description
01	Read Coils	Read Binary ON/OFF Status
02	Read Discrete Input	Read one or multiple discrete input values (0 or 1)
03	Read Holding Registers	Read one or multiple output registers
04	Read Input Register	Read one or multiple input registers
06	Write Single Register	Write a single 16 bit register value
16	Write Multiple Registers	Write multiple 16 bit registers at once

As per design, NEON® ONE is a measurement and control platform with flexible configuration of in- and outputs.

While there are some static register addresses for general device information and configuration, most information regarding measurements must be retrieved from register numbers, which depend on the current configuration of measurements.

If the composition of sensors changes, also the corresponding Modbus register numbers can change.

A change in the displayed order in the group edit menu will lead to a change in the Modbus registers.

To read the information from a sensor, first the group and sensor configuration has to be read and evaluated.

Each sensor/ input reserves a register range of 100 registers (Example below).

Register List

All registers are to be seen as relative to their respective TCP function area and have to be read with the respective TCP command for Discrete Inputs and Input registers!

Discrete Inputs

Address	Status Information	Comment
0	Maintenance Mode	Unused in SW 2.0.1 or newer
1	Global Dosing	Unused in SW 2.0.1 or newer
2	Alarm Relay	

Input Registers

General/Static Information

Address	Name	Data Type	Length	Bytes	Notes
0	Structure Version	U16	1	2	When changed, old register maps might have changed
1	Serial Number	String	8	16	
9	Software Version	String	6	12	
15	Device Time	U64	4	8	Milliseconds, UTC
19	Group Count	U16	1	2	# of active sensor groups
20	Group Sensor Count	Array_U8	32	64	One byte per group, max. eight sensors per group
52	Sensor Data Base Address	U16	1	2	
53	Dosing Enabled Group Status	U64	4	8	One bit per group (Bit 0 -> group 0, bit 1 -> group 1 etc.) - writable
57	Maintenance Mode Enabled Group Status	U64	4	8	One bit per group (Bit 0 -> group 0, bit 1 -> group 1 etc.)
61	Events Count	U16	1	2	Number of stored events (0..10)
62	Events List Base Address	U16	1	2	
63	Calibration Log Count	U16	1	2	Number of logged calibrations
64	Calibration Log Base Address	U16	1	2	

Sensor/ Input Information

These following addresses must be interpreted as offset from the value retrieved from register Sensor Data Base Address.

Example: Register 52 reads as 3000, then registers of the first sensor of the first group start at 3000. The second sensor of group 1 will start at 3100 etc.

If the first group has e.g., three sensors and the second group has two sensors, their respective starting addresses are:

Group 1, Sensor 1: Registers starting with 3000

Group 1, Sensor 2: Registers starting with 3100

Group 1, Sensor 3: Registers starting with 3200

Group 2, Sensor 1: Registers starting with 3300

Group 2, Sensor 2: Registers starting with 3400



It is important to read sensor type since a change in the displayed order or adding a group will lead to change in the Modbus registers.

Offset	Name	Data Type	Length	Bytes	Writable	Notes
0	Sensor Type	U16	1	2		See Table Predefined Enumeration
1	n-th of Sensor Type per Group	U16	1	2		Identifier if multiple sensors of a type are in a group
2	Displayed Value	F32	2	4		Value as displayed in Main Screen
4	Raw Value	F32	2	4		Unfiltered, uncalibrated value
6	Measurement Unit	string	5	10		
11	Filtering Level	U16	1	2		See following table "Predefined Enumeration"
12	Measuring Range Min.	F32	2	4		
14	Measuring Range Max.	F32	2	4		
16	Alarm Limit Low	F32	2	4		
18	Alarm Limit High	F32	2	4		
20	Warning Limit Low	F32	2	4		
22	Warning Limit High	F32	2	4		
24	Controller State	U16	1	2	yes	1=enabled, 0=disabled
25	Controller Output	F32	2	4		In %
27	Controller Setpoint	F32	2	4	yes	Value in measurement unit
29	Controller Type	U16	1	2	yes	See following table "Predefined Enumeration"
30	Controller Parameter 1	F32	2	4	yes	For type On/Off=Hysteresis; For type PID= Proportional
32	Controller Parameter 2	F32	2	4	yes	Integral
34	Controller Parameter 3	F32	2	4	yes	Differential
36	Last Calibration Timestamp	U64	4	8		Milliseconds, UTC

40	Last Calibration Slope	F32	2	4	
42	Last Calibration Zeropoint	F32	2	4	
44	Last Calibration Offset	F32	2	4	
46	Additional Value Present	U16	1	2	1=yes, 0=no
47	Additional Value	F32	2	4	
49	Additional Value Unit	string	5	10	
54	Status	U16	1	2	Bit Field Sensor Status
55	Sensor Name	string	24	48	Sensor Name as defined in UI

Event List

Similar to the Sensor Data, the following addresses must be interpreted as offset from the value retrieved from register Event List Base Address, with one event per 33 registers. Up to ten Events can be returned, with the Event Count register indicates the number of currently stored events.

Events are sorted by their Start Time, newest event first.

Offset	Name	Data Type	Length	Bytes	Description
0	Event Description (see below)	u16	1	2	Bits 0..12 Event Code, Bits 13..15 Event Type
1	Start Time	u64	4	8	Milliseconds, UTC
5	End Time	u64	4	8	Milliseconds, UTC; 0 if event active
9	Source	string	24	48	Event Source

Bit Encoded Fields

Sensor Status

Bit	Description
0	Sensor Missing

Predefined Enumerations

Sensor Type

Value	Description
1	Flow
2	Temperature
3	pH

4	DIS
5	Flow Meter
6	Biocide
7	Sulfite
9	Analog Input
10	ORP
11	Conductivity
12	Hydrogen Peroxide

Filtering Level

Value	Description
0	Off
1	Low
2	Medium
3	High

Control Type

Value	Description
1	On/Off
2	P
3	PI
4	PID

Event Type

Value	Description
1	Alarm
2	Warning
3	Info

Event Codes

Value	Description	End Time
0	Neon One Started	No
10	New pH Sensor connected	No
11	New DIS Sensor connected	No
12	New Flow Sensor connected	No
13	New Biocide Sensor connected	No
14	New Sulfite Sensor connected	No
16	New ORP Sensor connected	No
17	New Conductivity Sensor connected	No
18	New Hydrogen Peroxide Sensor connected	No
20	Sensor Calibrated	No

21	Reference Value Logged	No
30	Value under alarm level	
31	Value over alarm level	
32	No Flow	
33	Container level empty	
34	Container level low	
35	Leakage Alarm	
36	Backwash	
40	pH Node disconnected	
41	DIS Node disconnected	
42	Flow/Temp Node disconnected	
43	Biocide Node disconnected	
44	Sulfite Node disconnected	
46	ORP Node disconnected	
47	Conductivity Node disconnected	
48	Hydrogen Peroxide Node disconnected	
50	Cleaning Active	
60	Neon One Hub connected	
61	Neon One Hub disconnected	No
80	Dosage Check active	
81	Dosing disabled	
90	Sensor disconnected	
100	Controller Stop pH Priority	
110	Input Overload (ADC Error)	
121	Sensor Validation successful	No
122	Sensor Validation failed	No
130	mA Input out of range	
140	Custom Event 1 - Status - Active	
141	Custom Event 1 - Warning - Active	
142	Custom Event 1 - Alarm - Active	
143	Custom Event 2 - Status - Active	
144	Custom Event 2 - Warning - Active	
145	Custom Event 2 - Alarm - Active	
146	Custom Event 3 - Status - Active	
147	Custom Event 3 - Warning - Active	
148	Custom Event 3 - Alarm - Active	
149	Custom Event 4 - Status - Active	
150	Custom Event 4 - Warning - Active	
151	Custom Event 4 - Alarm - Active	
170	External Storage Medium error	
240	Unsupported Sensor Connected	
250	Maintenance Mode	

251	External Controller Stop	No
253	Reset to Factory Settings	No
254	Reset to Defaults	No

Calibration Log Type

Value	Description
1	Calibration
2	Reference

Calibration Log

Similar to the Sensor Data, the following addresses must be interpreted as offset from the value retrieved from register Calibration Log Base Address, with one event per 37 registers. Up to ten events can be returned, with the Calibration Log Count register indicates the number of currently stored calibrations.

Value	Description	Data Type	Length	Bytes	Notes
0	Timestamp	U64	4	8	Milliseconds, UTC
4	Calibration Type (see below)	U16	1	2	
5	Slope	F32	2	4	
7	Zeropoint	F32	2	4	
9	Offset	F32	2	4	
11	User Entry	F32	2	4	
13	Sensor Name	String	24	48	

4.2. System Integration and Accessories

The KRYPTON® ONE product family is available in two system configurations: KRYPTON® ONE | COMPACT and KRYPTON® ONE | HUB. Both systems are built on the modular and standardized architecture of the NEON® ONE system.

In the COMPACT version, all modules are housed within a single enclosure, providing an integrated solution for measurement and control.

In contrast, the HUB version includes an additional external enclosure, which allows for the integration of further I/O modules as well as a relay board for switching and alarm functions. This makes the HUB variant ideal for extended applications requiring relay-based control.

4.2.1. System Components Overview

Each KRYPTON® ONE system includes:

- NEON® ONE | COMPACT/ NEON® ONE | CORE (in the HUB version, the CORE always comes together with the HUB) – Central unit for control, display, data processing, and system integration.
- NEON® ONE | HUB (for KRYPTON® ONE | HUB) – Expansion enclosure for additional hardware modules (e.g., relays, I/O modules).
- NEON® ONE | NODE – Interface module installed directly on the sensor, responsible for converting analog signals into digital format.
- STABIFLOW® ONE – Flow assembly that stabilizes sensor environment for disinfection measurements.

- ZIRKON® ONE sensors – Measurement probes with internal memory for calibration data and ID.
- NEON® ONE | NODE or HUB cables – Preassembled shielded for NODE and HUB communication.

4.2.2. Hardware Configuration

The system's functionality is defined by the combination of modules installed. In the COMPACT version, all modules are integrated into a single housing. In the HUB version, additional modules and a relay board are placed in a second, separate enclosure for expanded control.

Depending on application requirements, the following modules may be included:

- Analog input/output modules
- Digital input/output modules
- Mechanical or solid-state relay boards (HUB only)



A complete list of supported modules can be found in Section 3.9.2 - Overview of Available Hardware Modules.

All modules are preinstalled at the factory, and each terminal is labeled clearly for easy wiring.

4.2.3. Accessory Compatibility

Only components from the NEON® ONE system are certified for use with the NEON® ONE platform.



Use of non-certified accessories may impair measurement accuracy and safety. Always use Kuntze-approved modules and cabling.

4.3. Operating Mode and Runtime Behavior

The system is intended for continuous operation.

- The NEON® ONE is designed for 24/7 monitoring under defined environmental conditions.
- After temporary power interruption, the system resumes operation automatically.
- Upon restart, sensors undergo a short warm-up and self-check (~30..60 s) before delivering reliable values.
- No intermittent operation limitations apply under normal use.

4.4. Consumable Components

The KRYPTON® ONE system contains a limited number of components that are subject to wear or performance degradation over time. These are classified as consumables and must be replaced or handled according to system and application requirements.

4.4.1. Consumables Supplied by Kuntze

ZIRKON® ONE sensors	Sensor lifetime depends on type, medium, and application. Replacement is required when calibration values fall outside acceptable tolerance or sensor response becomes unstable.

The calibration data of each sensor is stored automatically. The calibration results can be viewed to assess performance trends and plan replacements proactively.

4.4.2. Required Calibration Chemicals (Not Supplied)

The following chemicals and solutions are necessary for calibration of different sensor types, but are not part of the system delivery. Use only high-quality, certified reference standards:

- Redox (ORP): Standard reference solutions (e.g., 220 mV or 468 mV)
- Conductivity: Standard conductivity solutions (e.g., 1413 µS/cm, 500 µS/cm, etc.)
- pH: Buffer solutions (e.g., pH 4.00 / 7.00 / 10.00)

For disinfectant and sulfite measurement, a reference measurement is required. Calibration must be performed using the Water Sample Calibration function while the sensor remains installed in the assembly with active water flow.

Always use fresh and traceable calibration solutions. Do not reuse opened fluids or return them into their original containers.

Handling Guidelines

- Store calibration chemicals in cool, dark environments according to manufacturer recommendations.
- Opened buffers or standard solutions should be discarded after use, unless otherwise specified.
- Always recalibrate sensors after replacement, after extended downtime, or if measurement drift is suspected.
- Sensor calibration must be carried out by trained personnel only.

4.5. Protection Impairment Notice

Using the KRYPTON® ONE system in ways not specified by the manufacturer may impair the equipment's protection features. This includes unauthorized opening, incorrect wiring, using incompatible accessories, or operating outside defined conditions. Such usage may void warranties, lead to incorrect measurements, and compromise system safety.

5. Maintenance

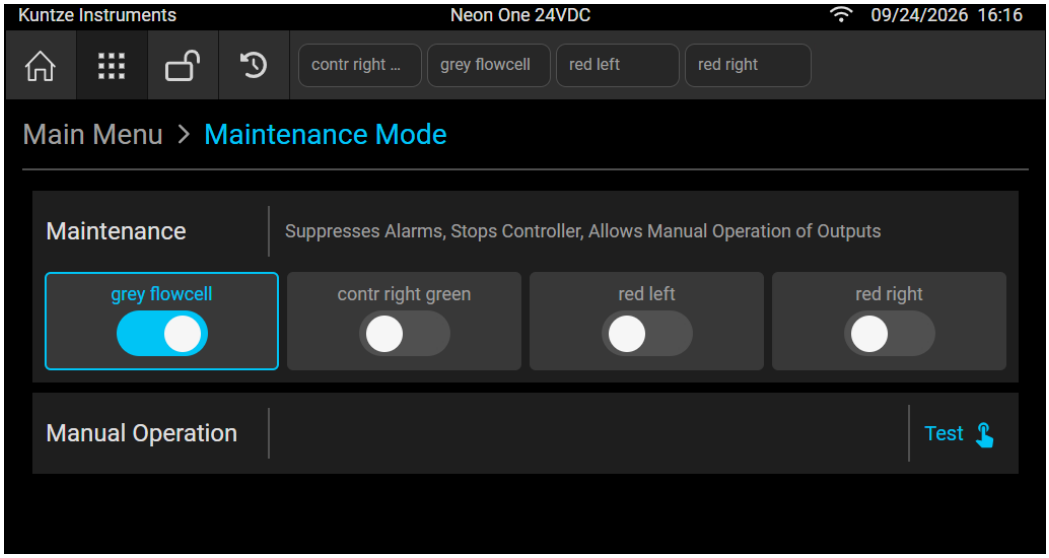
Regular maintenance is essential to ensure the safety, precision, and reliability of the measurement system. This chapter outlines preventive care routines, service safety guidelines, and calibration instructions.

5.1. Maintenance Mode and System Behavior

NEON® ONE provides a dedicated Maintenance Mode, accessible via the main menu. This mode is designed to:

- Suppress active alarms
- Deactivate the control loop
- Allow manual control of outputs

This enables safe access for maintenance tasks such as cleaning, sensor replacement, or functional testing without triggering unintended system responses. If more than one Sensor Group is defined, Maintenance Mode can be activated per group in order to safely work on those sensors and the hardware associated with them. In test mode, only the outputs associated to this group can manually overwritten.



Never perform maintenance while the system is in automatic operation. Always activate Maintenance Mode to prevent control actions or unwanted alarms.

When pressing "Test" in Maintenance Mode, you can also manually activate and verify outputs and relays to ensure correct wiring and response.

5.2. Preventive Maintenance Overview

The following maintenance tasks help ensure long-term system performance. Intervals may vary based on application and environmental conditions.

Cleaning of sensors and assemblies	Every two weeks or as needed
Cleaning of filters, tubing, and valves	Every two weeks or as needed
Cross-check of measurement results	Weekly
Calibration of pH sensors	As needed depending on the required level of accuracy
Calibration of other sensors	As needed depending on the required level of accuracy
Gasket and seal inspection	Weekly or as needed
Functional testing of safety features	Every two weeks
Sensor replacement (typical lifetime)	6..12 months (application dependent)

Maintenance schedules should be adapted to site-specific requirements, sensor usage, and water conditions.

5.3. Calibration and Guided Workflow

Calibration ensures reliable measurement output. The NEON® ONE interface includes a built-in, guided calibration mode with:

- Step-by-step visual instructions
- Real-time feedback of slope, offset, and deviation
- Historical data for past calibrations
- Intelligent warnings when recalibration or sensor replacement is required
- ORP sensors typically require no calibration but can be validated with Redox standard solutions

5.4. Gasket and Seal Inspection

All gaskets and O-rings must be checked regularly and replaced if worn or leaking. Only approved replacement parts should be used to maintain sealing integrity, especially under pressure.

5.5. Safety Feature Verification

It is important to periodically test alarm outputs, controller stop behavior, and limit alarms:

- Interrupt flow or disconnect a level sensor to trigger a fault condition.
- Verify correct alarm output and message display.
- Use the test functions under “Maintenance Mode” to manually simulate and verify safety responses.

These tests help ensure your system reacts reliably to critical fault conditions during real operation.

5.6. Cleaning and Decontamination

Regular cleaning of all components is essential to maintain measurement accuracy and extend the lifetime of the KRYPTON® ONE system and its connected sensors.

5.6.1. Sensor Cleaning

- Always begin with clean water and a soft, lint-free tissue.
- Handle all sensors with care; especially pH glass membranes are fragile.
- Never clean pH membranes mechanically. Scratching or abrading sensitive sensor surfaces can permanently damage them.

Recommended Cleaning by Contamination Type:

Loose dirt or deposits	Water + soft cloth
Limescale, hydroxides	Diluted hydrochloric acid
Organic fouling	Mild detergent or acid + pepsin or thiourea
Blocked or discoloured junctions	Cleaning agents such as thiourea or pepsin in diluted HCl
Ceramic junctions	Can be carefully abraded if strongly fouled – with caution
Metal bands	Can be cleaned carefully with powder detergent

After cleaning, rinse all electrodes thoroughly with water. pH electrodes should be stored for several hours in 3 M KCl solution after cleaning to restore the hydration layer.

Calibration is mandatory after cleaning or reinstallation.

5.6.2. Cleaning of Assemblies and Filters

In addition to sensors, all components in contact with water - such as flow cells, tubing, valves, and filters - must be kept clean to avoid measurement distortion and sensor fouling.

Use only water and a soft brush to clean system components. Many synthetic materials can be damaged by acids or solvents.

Cleaning STABIFLOW® ONE filter:

- Unscrew the inlet of the STABIFLOW® ONE assembly.
- Remove the integrated filter cartridge.
- Rinse with water to remove debris.
- Reassemble carefully, ensuring all seals are correctly in place.

5.6.3. Optional: Automatic Sensor Cleaning (ASR®)

The Automatic Sensor Cleaning (ASR®) function is designed to keep the sensors clean over time, not to perform intensive cleaning of heavily soiled sensors. It helps prevent build-up and supports long-term measurement stability with minimal manual maintenance.

ASR® can only be used with Zirkon® ONE DIS sensors.

Setting up the ASR® function:

- The ASR® frequency can be set to a maximum of once per day.
- We recommend starting with a low cleaning frequency, such as once per week or even once per month, depending on the water quality and application conditions.
- ASR® settings can be configured directly in the DIS parameters (Sensor Details) via the appropriate tile interface on the device.

Overuse of the ASR® may put unnecessary mechanical or chemical stress on the sensors and is typically not required for most applications.

5.7. Fuse and Power Supply Notice

- The integrated power supply inside NEON® ONE | CORE is not user-replaceable.
- There are no fuses intended for user intervention.
- Power must be disconnected before servicing the internal hardware.

5.8. Restarting After Maintenance

After performing any maintenance tasks:

- Ensure all lines, valves, and sensor connections are sealed.
- Power on the system and allow sensor readings to stabilize.
- Verify that all alarm and control settings are correct.
- Resume automatic operation only after validating all measurements.

Make use of all available system safety functions including controller stop, alarm relay, and manual testing tools.

5.9. Information for Service Personnel

Trained professionals should perform any servicing involving electrical or internal components. The following topics must be covered:

- Identification of product-specific risks (e.g., voltage, chemical exposure).
- Required protective measures (e.g., gloves, safety goggles).
- Procedures to verify operational safety before recommissioning.

6. System Integration & Special Conditions

The NEON® ONE is designed to be integrated flexibly into larger process or control systems. However, certain factors must be considered to ensure reliable and safe operation in special environments or under application-specific constraints.

6.1. Integration Into Systems

When used as part of an automated or externally controlled system, the following aspects must be observed:

- Signal Separation: Analog/digital communication cables must be routed separately from mains power lines to avoid interference.
- System Start-Up Behavior: On power-up, outputs retain their last known state until the controller starts; verify correct initialization.
- Safe States: In the event of failure or loss of communication, external systems must interpret the last state or an alarm output correctly.

Ensure that external safety PLCs or master controllers are configured to detect and handle communication faults or undefined states.

6.2. Application-Specific Ambient Conditions

Certain process or installation conditions may require additional attention:

High humidity (>80 %)	Ensure correct sealing (IP65), avoid condensation
Water with low conductivity	Disinfection measurement requires ≥ 50 µS/cm
Aggressive atmospheres	Avoid exposure to strong acids, alkalis, or chlorinated vapors
Extreme vibration or shock	Mount on solid, vibration-damped surfaces
Elevated EMC environments	Use shielded cables, verify grounding of system
Remote installation	Use Cloud Connect® and/or Remote Access to enable diagnostics

The NEON® ONE system is not designed for explosive atmospheres or applications involving flammable gases.

6.3. Interactions With Other Systems

- The NEON® ONE can be integrated into SCADA, PLC, or remote monitoring systems using analog/digital I/Os or Modbus TCP (optional).
- In systems with redundant safety logic, appropriate feedback loops or watchdog signals must be implemented externally.
- Ensure compatibility of signal levels, relay capacities, and response times when interacting with dosing pumps or actuators.

6.4. Environmental and Electrical Safety Notes

- Environmental specifications must always be respected (see Section 2.4: Ambient Conditions).
- Proper grounding and shielding are essential to prevent EMC interference.
- NEON® ONE system is not galvanically isolated from external actuators unless specifically wired via isolation modules.

7. Environmental Information & Disposal

7.1. Disposal of Electrical and Electronic Equipment



This product is subject to the European Directive on Waste Electrical and Electronic Equipment (WEEE) – 2012/19/EU. Do not dispose of the device with general household waste.

Please follow these guidelines for safe and environmentally responsible disposal:

- Deliver the device to an authorized collection point for recycling
- Do not dismantle or incinerate the device
- Ensure compliance with local disposal and recycling regulations

By disposing of the NEON® ONE system properly, you help:

- Minimize environmental harm
- Avoid improper landfill usage
- Support the reuse and recovery of valuable materials

If you have questions regarding disposal, contact your local distributor or municipal waste authority.

7.2. Disposal of Waste Batteries



This product contains a Lithium-button cell, CR1220. In accordance with Regulation (EU) 2023/1542 on batteries and waste batteries, waste batteries must be collected separately. Do not dispose of batteries with general household waste.

Please follow these guidelines for safe and environmentally responsible disposal:

- Remove the battery from the device before disposal.
- Return waste batteries free of charge to a collection point for waste batteries, to a retailer selling batteries, or to a municipal collection point.
- Cover the terminals of lithium batteries with insulating tape before disposal to prevent short circuits.
- Do not throw batteries into fire. Do not open, crush or damage them.

Batteries may contain substances that are harmful to the environment and human health. Damaged or improperly disposed lithium batteries can cause fires during collection and recycling. Separate collection ensures safe treatment and allows valuable raw materials to be recovered.

If you have questions regarding disposal, contact your local distributor or municipal waste authority.