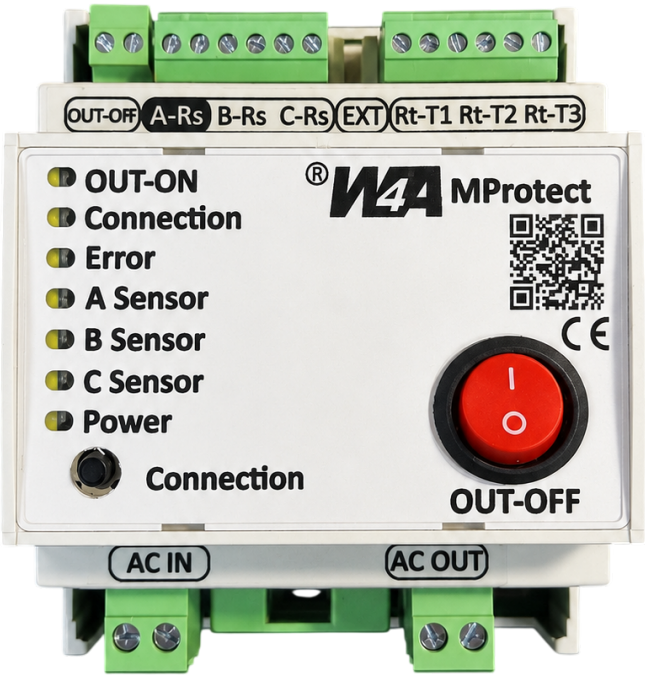
EN

W4A MProtect

Installation and Setup Manual



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1. About this manual

1.1. Purpose of the manual

This manual contains the information required for planning, installation, electrical connection, configuration, functional checks, technical maintenance and troubleshooting of W4A MProtect.

The procedures follow the commissioning sequence: model identification, installation preparation, circuit connection and checks, app pairing, configuration and functional tests. Daily operation is described in the **User manual**.

Read and understand the instructions before starting work. Keep the manual throughout the equipment's service life and make it available to those responsible for installation and maintenance.

1.2. Intended audience

This manual is intended for installers, maintenance personnel and technical support staff qualified and authorised to work on the equipment.

The installer is responsible for mounting, selecting protective devices and conductors, connecting the supply and load, installing sensors, configuration and commissioning tests. The installer must check motor, contactor and other component compatibility and explain controls and stopping procedures to the user.

Maintenance personnel must ensure installation safety before starting work and recheck affected functions afterwards. Work on electrical circuits must only be performed by qualified personnel.

The end user should consult the **User manual** for normal operation and viewing states, history and notifications.

1.3. Models covered

This manual applies to the following product models and variants:

Product	Model covered
W4A MProtect	S20
W4A MProtect	S50
W4A MProtect	T20
W4A MProtect	T50
W4A MProtect	T20 Pro
W4A MProtect	T50 Pro
W4A MProtect	T20 Pro2
W4A MProtect	T50 Pro2

The exact model designation and reference can be found on the device identification label, packaging or in the app.

Some functions described in this manual may depend on:

- the device model;
- the hardware version;
- the firmware version;
- the app version;
- the installation configuration;
- the connected sensors or accessories;
- the availability of communication services.

Where a function is not available on all models, this limitation is indicated in the relevant section.

Do not use this manual to install, configure or operate a model that is not explicitly listed in this section.

1.4. Firmware compatibility

The installed version can be viewed in the app's **Information** tab.

Function availability, screens and some procedures may vary with the installed version. Also refer to the instructions displayed by the app.

Whenever possible, update the firmware to the recommended version before completing the device configuration.

Do not disconnect the power supply or interrupt communication during a firmware update unless expressly instructed by the app.

1.5. App compatibility

Configuration and operation using a mobile device are performed through the **W4A MProtect** app, available for:

- Android 8.0 or later;
- iOS 15 or later.

Screen layouts, symbols and some option names may vary depending on the operating system and app version.

Before updating the app or operating system, check the compatibility specified for the version you intend to install.

1.6. Symbols and warning levels

Warnings appear in highlighted boxes with a coloured side bar. The heading identifies the warning level and, where applicable, the hazard. The following text gives the precautions or procedure to follow.

The written designation identifies the warning level even in a black-and-white printout. Colour is a

visual aid and does not replace reading the instructions.

DANGER — Hazardous situation

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

WARNING — Potentially hazardous situation

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

CAUTION — Precautions for use

Indicates a situation that could cause minor or moderate injury, or a practice that could damage the product, load or installation.

NOTE

Provides additional information to help understand or carry out a procedure. A note does not, by itself, identify a personal injury hazard.

1.7. Other conventions

App menu, button and option names appear in **bold**. Follow numbered instructions in the order shown and complete checklists before proceeding.

The following terms are used in this manual:

Device or equipment: the installed W4A MProtect unit.

Controlled load: the motor, pump, contactor or other equipment controlled by W4A MProtect, depending on the installation.

Output: the electrical control or power circuit available on the model.

Sensor: a component connected to a control input or current measurement channel; the context identifies the sensor type.

App: the official W4A MProtect app.

Manual operation: a command initiated by the user under the conditions permitted by the installation.

History: the operating records provided by the system.

1.8. Responsibility for reading the manual

The installer must read the safety, installation and configuration instructions before commissioning the equipment. The installer must also give the user the information required for normal operation and for identifying abnormal conditions.

The user must receive and read the User manual before changing programmes or executing commands. Maintenance personnel must consult applicable procedures before any work.

If an instruction is unclear or does not match the installed equipment, do not carry out the operation until clarification has been obtained from the installer or technical support.

2. Safety

2.1. General safety information

Read this manual before installing, configuring, using or maintaining W4A MProtect. Keep it in an accessible place and make it available to those responsible for installing and using the equipment.

The installation may combine electricity, motors and hydraulic circuits with automatic or remote operation. Assess the risks of the complete assembly and the consequences of unexpected starting or a failure.

W4A MProtect does not replace the electrical, hydraulic or mechanical protective measures required for the installation. Safety must be ensured through design, assembly, operating procedures and maintenance.

2.2. Electrical safety

DANGER — Risk of electric shock

Do not open the equipment, touch terminals or change connections while circuits are live.

Depending on the model, the rated supply is 230 V AC or 400 V AC. Check the label. Before any electrical work, qualified personnel must:

- identify and isolate all power supplies involved;
- prevent inadvertent restoration of power;
- verify the absence of voltage using suitable equipment;
- protect the work area and ensure that the work can be carried out safely.

Stopping operation in the app does not provide electrical isolation. Also consider external power supplies to equipment connected to the controller.

DANGER — Damaged or wet electrical components

Do not use the equipment with damaged cables, accessible unprotected terminals or signs of water ingress. Do not handle electrical components with wet hands.

2.3. Risk of automatic operation

WARNING — Possibility of automatic or remote operation

The motor and other connected equipment may be controlled automatically or remotely. Before working on them, prevent operation and isolate the energy sources involved.

Inform other users and cordon off the work area where necessary.

Disabling a programme or sending a stop command does not replace isolation of energy sources. Do not rely solely on the app to protect people during installation or maintenance work.

2.4. Installer qualifications

Installation, electrical connections and any work requiring access to electrical circuits must be carried out by qualified personnel.

The installer is responsible for:

- checking that the equipment is suitable for its intended use;
- following the connection diagram for the installed model;
- selecting compatible conductors, protective devices and components;
- ensuring protection against electrical contact and access to isolation devices;
- checking the operation and safety of the complete assembly before handover;
- explaining operating and safe stopping procedures to the user.

2.5. Intended use

Use W4A MProtect only for the motor control, monitoring and configurable protection applications described in this manual, with compatible components and within the limits stated in the technical specifications.

Assess whether the system is suitable for the installation, considering hydraulic conditions, the environment and the consequences of failure. Where these consequences could endanger people or property, provide independent protective measures.

2.6. Foreseeable misuse

Do not use the equipment other than as intended. In particular:

- do not exceed the specified electrical or environmental limits;
- do not connect loads or components whose compatibility has not been verified;
- do not modify the equipment or bypass protective devices;
- do not use the controller as the only safety device;
- do not allow unauthorised people to access circuits or settings;
- do not interpret an output-off indication as proof of the absence of voltage or of the motor actually having stopped.

2.7. External protection and isolation

> **WARNING — External protection and isolation**
>
> W4A MProtect does not replace the protective and isolation devices required for the electrical installation, motor and controlled load.

The installation must include the following devices and protective measures wherever applicable to its characteristics and the requirements in force:

- short-circuit protection;
- overcurrent and overload protection;
- protection against electric shock, including protective earthing where applicable;
- switching and isolation devices;
- residual current protection;
- surge protection;
- phase-loss or phase-imbalance protection;
- emergency stop devices;
- any other protective measures required for the load, machine or installation.

Select devices according to the voltage, current, load characteristics and required breaking capacity. Follow the manufacturers' instructions and do not size protective devices solely on the rating of a W4A MProtect output.

Isolation devices must be identified and accessible to authorised personnel, allowing all sources that could supply the equipment or load during work to be isolated. Before starting work, isolate the sources involved, prevent accidental reconnection and verify the absence of voltage.

Where an external contactor is used, check its suitability for the motor and utilisation category. The selection, installation and coordination of protective devices, contactors and other components are the responsibility of the designer and qualified installer.

Where necessary, also provide independent means to stop the water supply and limit the consequences of leaks or hydraulic component failures.

2.8. Conductors, terminals and controlled load

Use conductors suitable for the circuit and follow the terminal preparation and tightening instructions. Check connections before energising the equipment. Unsuitable conductors, loose terminals or incorrect connections may cause overheating, electrical arcing, damage or fire.

Do not leave exposed copper outside terminals. Avoid mechanical stress on connections and protect cables against pulling, abrasion and contact with hot surfaces.

Check the electrical diagram and specifications to determine whether the model allows direct load control, control through an external contactor, or both. Do not connect a motor or other power load directly to

an output intended solely to control a contactor.

Check that the motor, contactor and other loads are compatible with the installed model, observing voltage, current, power and switching limits. Direct control does not remove the need for applicable external protective devices. Do not interconnect outputs, power supplies or common terminals without following a diagram intended for the equipment.

For inductive loads such as contactors, coils, solenoid valves or relays, install suitable surge suppression where required. Select the protection according to the supply type and load; it may include, as applicable:

- a flyback diode for DC coils, observing polarity;
- an RC snubber or varistor for AC coils;
- another device recommended by the load manufacturer.

Installing surge suppression must not compromise contactor release, stopping times or any safety function. Check that the solution is compatible with the load and its control circuit.

2.9. Sensors

Use only level sensors, probes, pressure switches and control contacts compatible with the installed model's inputs. Before connecting them, check the input type, electrical characteristics and corresponding diagram. Observe polarity where applicable and make connections with power supplies isolated.

Do not apply external voltage to sensor inputs unless expressly stated otherwise. Compatibility cannot be determined solely by whether the connector fits or the cable can be connected to the terminal.

Use suitably insulated cables, protected against mechanical damage and routed separately from power circuits where necessary. Avoid long parallel runs alongside motors, contactors or other interference sources. Where required, use screened cable and connect the screen according to the applicable instructions.

After installation or replacement, test each sensor individually and check that the state displayed in the app matches the actual level, pressure or control condition. Also check the configured actions and priorities before allowing automatic operation.

A fault, disconnection, short circuit or incorrect reading may change system behaviour. Configure a safe condition in the event of failure where this option is available. Do not modify, bridge or bypass sensors without assessing the consequences for load starting and stopping.

Sensors must not be the only means of protection against flooding, dry running or other risks where the installation assessment requires independent protective devices.

2.10. Operating environment

Install the equipment in an enclosure suitable for the environment and the conditions stated in the technical specifications. The complete installation must protect terminals, cables and other components against accidental contact and external influences.

Do not install or use the equipment in locations with:

- exposure to water, rain or condensation incompatible with the installation's protection;
- conductive dust or corrosive agents;

- flammable gases or potentially explosive atmospheres;
- excessive vibration or risk of impact;
- direct sunlight or heat sources;
- environmental conditions outside the specified limits.

Observe the specified mounting orientation, clearances and ventilation requirements. Do not cover the equipment or obstruct heat dissipation areas. Consider the heat generated by other enclosure components.

2.11. Handling and storage

Handle the equipment carefully, avoiding drops and impacts. Store it in a clean, dry place protected against dust, moisture, extreme temperatures and direct sunlight.

> **CAUTION — Deteriorated equipment**
>
> Do not install a unit showing deformation, terminal damage, moisture, a burning smell or other signs of deterioration. Request an assessment before commissioning it.

2.12. Communication

Local or remote communication may be delayed or interrupted. Before repeating a command, check the available state information and, where necessary, inspect the installation on site.

An indication in the app does not replace checking safety conditions. Do not use communication as the only means of stopping where operation could endanger people or property.

Protect access to the app and equipment. Grant permissions only to people who need them.

2.13. Firmware updates

Use only updates provided through official W4A channels and follow the applicable instructions. Update at a time when the installation can safely be temporarily unavailable.

Before starting, ensure no work is in progress on the motor or controlled load. After updating, check the relevant settings and verify operation before resuming normal use.

2.14. Maintenance and repairs

Maintenance must be carried out by personnel qualified for the work concerned. Do not carry out repairs or modifications not specified by W4A.

WARNING — Pressurised water

Before dismantling a pump or other hydraulic component, isolate the water supply and release pressure according to the component instructions. Consider water retained in pipes and the risk of spillage onto electrical equipment.

Periodically check the condition of cables, connections, enclosure and protective devices according to operating conditions. After work, check assembly, remove tools and loose materials and test operation under controlled conditions.

2.15. Abnormal operation and emergencies

Stop using the equipment if you notice a burning smell, abnormal heating, unusual noises, water ingress, damaged cables, repeated protective device tripping or dangerous operation.

If safe to do so, isolate power and the water supply using the means provided in the installation. Do not touch wet or damaged components that may be live.

Keep people away from the hazard area and request qualified personnel. Do not return the equipment to service until the cause has been identified and corrected. In an emergency involving risk to people, contact the emergency services.

2.16. Residual risks

Even with correct installation, risks may remain due to sensor or contactor failures, mechanical movement, hydraulic pressure, incorrect commands and unavailable components or communication.

Take measures proportionate to the consequences of failure, including inspection, supervision and independent protective devices where required. Inform users of the risks and keep isolation and water shut-off devices accessible.

3. Product description and variants

3.1. Product overview

Depending on the model and configuration, W4A MProtect is designed to control, monitor and provide protection functions for electric motors.

The device monitors the current associated with load operation and allows operating conditions to be configured for current values outside the defined limits.

Depending on the variant and installation, W4A MProtect can control the load directly, control an external contactor coil or allow both connection methods, within the respective electrical ratings.

The equipment can receive sensor signals to control load operation according to installation conditions.

Clock, scheduling and timer functions allow automatic operation according to previously configured settings.

W4A MProtect can record information about operations, current and other events relevant to monitoring performance.

3.2. Main functions

Depending on the model and configuration, W4A MProtect may provide:

- local and remote load control;
- current monitoring;
- configurable current protection functions;
- sensor connections;
- scheduling and timers;
- operation and event logging;
- operation, current and sensor history;
- state monitoring;
- notifications;
- firmware updates.

3.3. System components

A W4A MProtect installation may include:

- W4A MProtect device;
- motor or other compatible load;
- external contactor, where required;
- current sensors;

- sensors;
- external protective and isolation devices;
- mobile device with the compatible app;
- remote services provided by W4A, where applicable.

Not all components are supplied. Check the package contents and specifications of the purchased reference. The selection, compatibility and installation of external components must be checked by qualified personnel.

3.4. Device identification

The model and main product characteristics are shown on the device identification label.

Before installation, check that the label data matches the model and installation characteristics.

Additional information, such as the serial number and hardware and firmware versions, can be viewed in the app's **Information** tab, where available.

Do not remove, cover, alter or make the identification label illegible.

3.5. Load control modes

Depending on the model, W4A MProtect can use the following control modes:

Direct control

On compatible models, the load can be connected to the W4A MProtect power output, provided the electrical ratings, utilisation category and conditions in the technical specifications are observed.

Control through a contactor

W4A MProtect controls an external contactor coil. The contactor connects and interrupts the load's power circuit.

Some models only allow control through a contactor. Others allow direct control or control through a contactor.

Compatibility and limits for each variant are provided in the technical specifications and corresponding installation diagrams.

> **CAUTION — Connection compatibility**
>
> Do not connect a motor or other power load directly to an output intended solely to control a contactor.

3.6. Inputs and sensors

W4A MProtect can receive sensor signals to configure load operation.

The number, type and behaviour of inputs vary between models.

Consult the technical specifications and electrical diagram before connecting any sensor.

3.7. Current measurement and monitoring

W4A MProtect uses current measurement to monitor load operation and perform the configured functions.

The measurement method depends on the installed variant and must match the electrical diagram and model specifications.

Incorrect installation or configuration of the measurement system may cause:

- incorrect readings;
- failure to detect the load;
- false alarms;
- incorrect operation of configured functions;
- incorrect historical records.

The displayed measurement is intended for equipment control and monitoring. It must not be used for billing or other applications requiring a legally certified instrument unless expressly stated otherwise.

3.8. Control panel

The control panel allows operating states to be checked locally and certain operations to be performed.

A detailed description of indicators and buttons is provided in 6 Control panel.

3.9. Operating records

W4A MProtect can record device and load operating data, including:

- switching on and off;
- current values;
- sensor states;
- notifications;
- other relevant events.

Records are intended for monitoring and troubleshooting and do not replace on-site checks or physical safety devices.

4. Technical specifications

4.1. Applying the specifications

Check the characteristics in this chapter for the installed W4A MProtect model. Before selecting components or making connections, confirm the device identification, power supply, output characteristics and applicable electrical diagram.

Do not use values for a different model.

4.2. General characteristics

Characteristic	Specification
Enclosure protection rating	IP20
Operating temperature	−5 °C to 50 °C
Operating relative humidity	20% to 60%, non-condensing
Clock backup battery	3 V DC - CR2032
Installation location	Electrical enclosure
Mounting method	DIN rail

The equipment must be installed in an electrical enclosure with a protection rating suitable for the environmental conditions.

4.3. Power supply and consumption

Model	Rated supply	Maximum standby consumption	Maximum operating consumption
MProtect-S20	230 V AC, 50/60 Hz	2.3 W	3.1 W
MProtect-S50	230 V AC, 50/60 Hz	2.3 W	3.1 W
MProtect-T20	400 V AC, 50/60 Hz	3.2 W	4 W
MProtect-T50	400 V AC, 50/60 Hz	3.2 W	4 W
MProtect-T20 Pro	400 V AC, 50/60 Hz	3.2 W	4 W
MProtect-T50 Pro	400 V AC, 50/60 Hz	3.2 W	4 W
MProtect-T20 Pro2	400 V AC, 50/60 Hz	3.2 W	4.7 W
MProtect-T50 Pro2	400 V AC, 50/60 Hz	3.2 W	4.7 W

4.4. Output circuits

Model	Number of channels	Maximum rated current of the internal contactor
MProtect-S20	1	6 A
MProtect-S50	1	6 A
MProtect-T20	1	2 A
MProtect-T50	1	2 A
MProtect-T20 Pro	1	2 A
MProtect-T50 Pro	1	2 A
MProtect-T20 Pro2	2	2 A
MProtect-T50 Pro2	2	2 A

The output rating depends on the load characteristics and utilisation category. The motor starting current must not exceed the limits applicable to the model.

4.5. Motor range with an external contactor

Model	Load configuration	Maximum rated current
MProtect-S20	Single-phase	16 A
	Three-phase	16 A
MProtect-S50	Single-phase	40 A
	Three-phase	40 A
MProtect-T20	Two-phase	16 A
	Three-phase	16 A
MProtect-T50	Two-phase	40 A
	Three-phase	40 A
MProtect-T20 Pro	Three-phase	16 A
MProtect-T50 Pro	Three-phase	40 A
MProtect-T20 Pro2	Three-phase	16 A
MProtect-T50 Pro2	Three-phase	40 A

The contactor, conductors and protective devices must be sized independently for the load and installation.

4.6. Input and measurement circuits

Model	Voltage measurement channels	Current measurement channels	Sensor inputs	EXT expansion connector
MProtect-S20	1	3	3	Yes
MProtect-S50	1	3	3	Yes
MProtect-T20	1	3	3	Yes
MProtect-T50	1	3	3	Yes
MProtect-T20 Pro	3	3	4	Yes
MProtect-T50 Pro	3	3	4	Yes
MProtect-T20 Pro2	3	3	4	Yes
MProtect-T50 Pro2	3	3	4	Yes

4.7. Sensors

Characteristic	Specification
Sensor type	NO/NC dry contact
Typical activation threshold	< ≈100 kΩ
Voltage present at the input	9 V AC

External voltage must not be applied to the inputs unless expressly stated otherwise.

4.8. Radio communication

Technology	Characteristics
Bluetooth	Bluetooth Low Energy 5, compatible with Bluetooth Low Energy 4.2 or later devices.
Wi-Fi	2.4 GHz, IEEE 802.11 b/g/n
Bluetooth band	2402 MHz to 2480 MHz
Maximum Bluetooth power	+9 dBm
Wi-Fi band	2412 MHz to 2472 MHz
Maximum Wi-Fi power	18 dBm
Bluetooth range	Up to 150 m in open space under ideal conditions

Actual range depends on obstacles, the electrical enclosure, interference, the mobile device and network conditions.

4.9. Dimensions and weight

Model	Dimensions	Approximate weight
MProtect-S20	72 × 90 × 66 mm	260 g
MProtect-S50	72 × 90 × 66 mm	260 g
MProtect-T20	72 × 90 × 66 mm	260 g
MProtect-T50	72 × 90 × 66 mm	260 g
MProtect-T20 Pro	107 × 90 × 66 mm	350 g
MProtect-T50 Pro	107 × 90 × 66 mm	350 g
MProtect-T20 Pro2	126 × 90 × 66 mm	370 g
MProtect-T50 Pro2	126 × 90 × 66 mm	370 g

4.10. Terminals and conductors

Characteristic	Specification
Minimum insulation temperature	105 °C

4.11. Application limits

Select the motor, contactor, conductors and protective devices within the electrical, environmental and switching limits of the model. Consider rated and starting currents, the number of phases and the conditions specified by the manufacturers of the installation components.

5. Planning and electrical installation

5.1. Scope

This chapter describes preparation, mounting and installation checks for W4A MProtect. It is intended for appropriately qualified installers and maintenance personnel.

Before starting work, read chapter 2 Safety and check the equipment characteristics in chapter 4 Technical specifications.

> **DANGER — Risk of electric shock**
>
> Make connections with all power supplies involved isolated. Prevent inadvertent restoration of power and verify the absence of voltage before starting work. Also consider external supplies to circuits connected to the outputs.

5.2. Planning checks

Before mounting, check the supply voltage and frequency, number of phases, motor rated and starting currents and the control mode permitted by the model. Determine whether an external contactor is required and size conductors, protective devices and means of isolation.

Define sensor locations and the correspondence between phases and current channels. Also consider enclosure space, environmental conditions and the communication required for the intended use. Record this information to support configuration and testing.

5.3. Selecting the location

Install W4A MProtect in an electrical enclosure suitable for the environment, protected against accidental contact and unauthorised access. Observe the environmental limits in the technical specifications.

Choose a location accessible for inspection and maintenance. Avoid direct sunlight, heat sources, conductive dust and corrosive agents. Position the enclosure so that leaks, runoff or hydraulic maintenance cannot affect electrical components.

Consider ventilation of the complete assembly and communication conditions. A metal enclosure or other obstacles may reduce wireless range.

5.4. Mechanical mounting

Mount the device on the enclosure’s DIN rail using the equipment’s mounting system. Before mounting, check the rail condition and available space for cable routing, terminal access and heat dissipation.

After mounting, check that the device is firmly secured. Do not force the housing, obstruct indicators or controls, or use cables for support.

5.5. Conductor preparation and routing

Select conductors according to current, circuit length, voltage drop and installation conditions. Check compatibility with the terminals used.

Identify both ends of each conductor. Cut off damaged ends and prepare connections without leaving exposed copper or loose strands. Do not insert several conductors into one terminal without confirming that this is permitted.

Separate control sensor, current sensor and OUT-OFF wiring from power circuits. Avoid long parallel runs alongside motors, contactors or other interference sources. Route cables to prevent pulling, abrasion, contact with hot surfaces and water ingress into the enclosure.

5.6. General electrical diagram

Terminal layout, number and function may vary by model. Before making any connection, confirm that the diagram matches the variant shown on the device identification label.

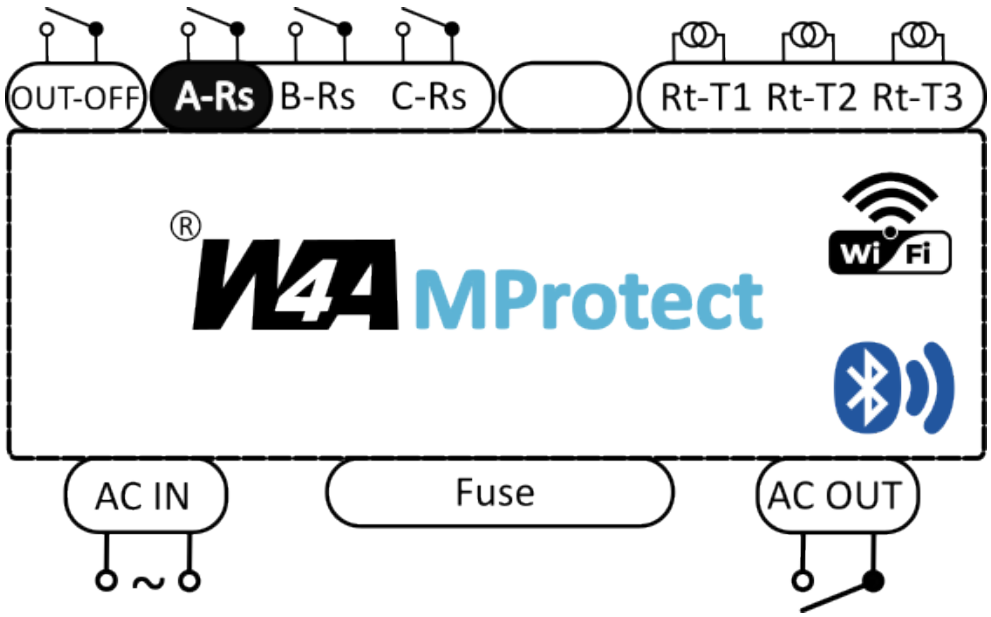


Figure 5.1: General electrical diagram

Identification	Function
AC IN	Device power supply input
AC OUT	AC output
OUT-OFF	Switch input for enabling and physically inhibiting the output relay control circuit
A-Rs	Sensor A input
B-Rs	Sensor B input
C-Rs	Sensor C input

Identification	Function
Rt-T1	Current sensor T1 connection
Rt-T2	Current sensor T2 connection
Rt-T3	Current sensor T3 connection
Fuse	Fuse

> **CAUTION — Diagram compatibility**
>
> Do not make connections based solely on the physical position of terminals.

Always check:

- the device model;
- the markings beside the terminals;
- the corresponding electrical diagram;
- the permitted control mode;
- the limits in the technical specifications.

5.7. Selecting the control mode

Check the specifications to determine whether the model permits direct control, control through a contactor, or both. Use a contactor where required by the model or where the load's rated current, starting current, power or utilisation category exceeds the output rating.

Do not connect a power load directly to an output intended solely to control a contactor.

5.8. Selecting external protective devices

Size and coordinate protective devices with the voltage, rated and starting currents, conductors and motor characteristics. Consider breaking capacity, short-circuit and overload protection, residual current protection and protective earthing where applicable, as well as the need for surge protection.

Provide identified, accessible means of isolation for the device and external circuits. An output rating does not, by itself, determine protection of the complete assembly.

5.9. Connecting the power supply

Check the rated voltage on the model label and connect the supply to AC IN according to the variant's diagram. Observe phase and neutral identification where applicable, conductor cross-section, tightening torque and terminal order.

Do not apply a voltage other than specified. Keep power supplies isolated until all other connections and checks are complete.

5.10. Direct control connection

Direct control applies only to compatible models. Before connecting the load, check the voltage, rated and starting currents, power, utilisation category and switching frequency permitted by the output.

Connect the load according to the model's electrical diagram and retain all necessary external protective devices.

5.11. Connection through a contactor

When an external contactor is used, the W4A MProtect output controls an electrically compatible coil. Select the contactor considering coil voltage and current, motor rated and starting currents, utilisation category and switching frequency.

The load power circuit must pass through the contactor's power contacts. Fit coil surge suppression where required, according to the manufacturer's instructions and without compromising release time.

5.12. Installing current sensors

Available operating modes (single-phase, two-phase or three-phase) depend on the W4A MProtect model. Check compatibility in the equipment specifications and select the mode corresponding to the load in the app.

Use sensors compatible with the model and expected current range. Each sensor must enclose only one load conductor. Do not pass outgoing and return conductors through the same sensor.

The following diagrams show only current sensor installation and connection. For the W4A MProtect supply, load control, PE protective conductor and external protective devices, follow the model's installation diagram. The selected measurement mode does not change the supply voltage required by the device.

Single-phase and two-phase modes

In single-phase mode, the load supply conductors are L and N; in two-phase mode, L1 and L2. In both modes, install only one sensor on one load supply phase and connect it to Rt-T1. Leave Rt-T2 and Rt-T3 without sensors.

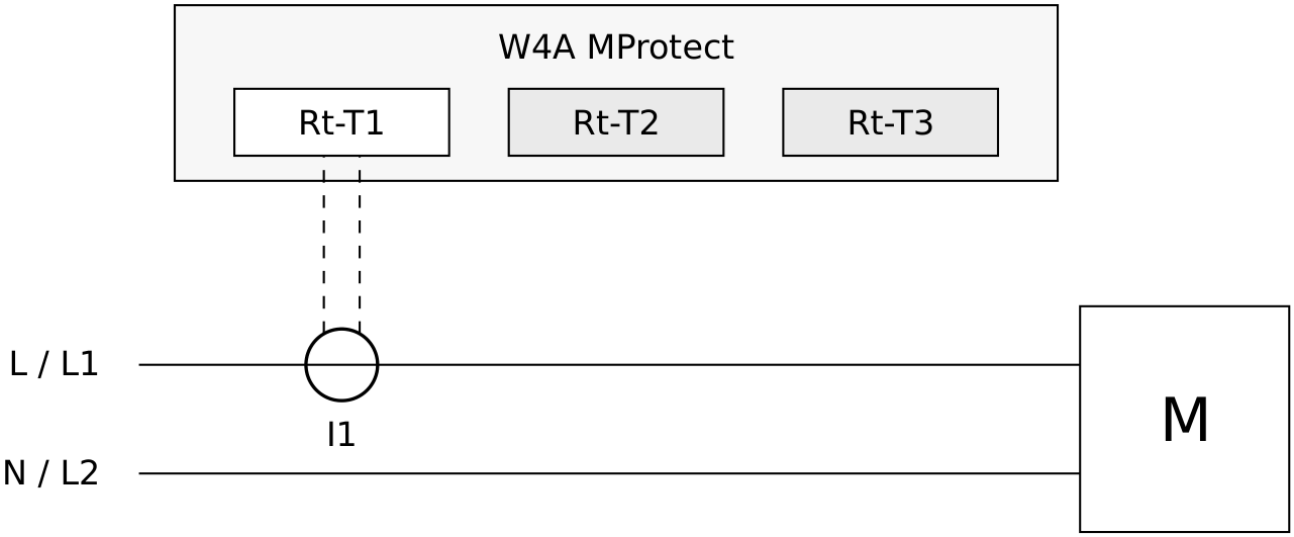


Figure 5.2: Current sensor connection in single-phase and two-phase modes.

Three-phase mode

Install one sensor per phase and connect them to Rt-T1, Rt-T2 and Rt-T3 respectively. Maintain the correspondence between phase, sensor and measurement channel displayed in the app.

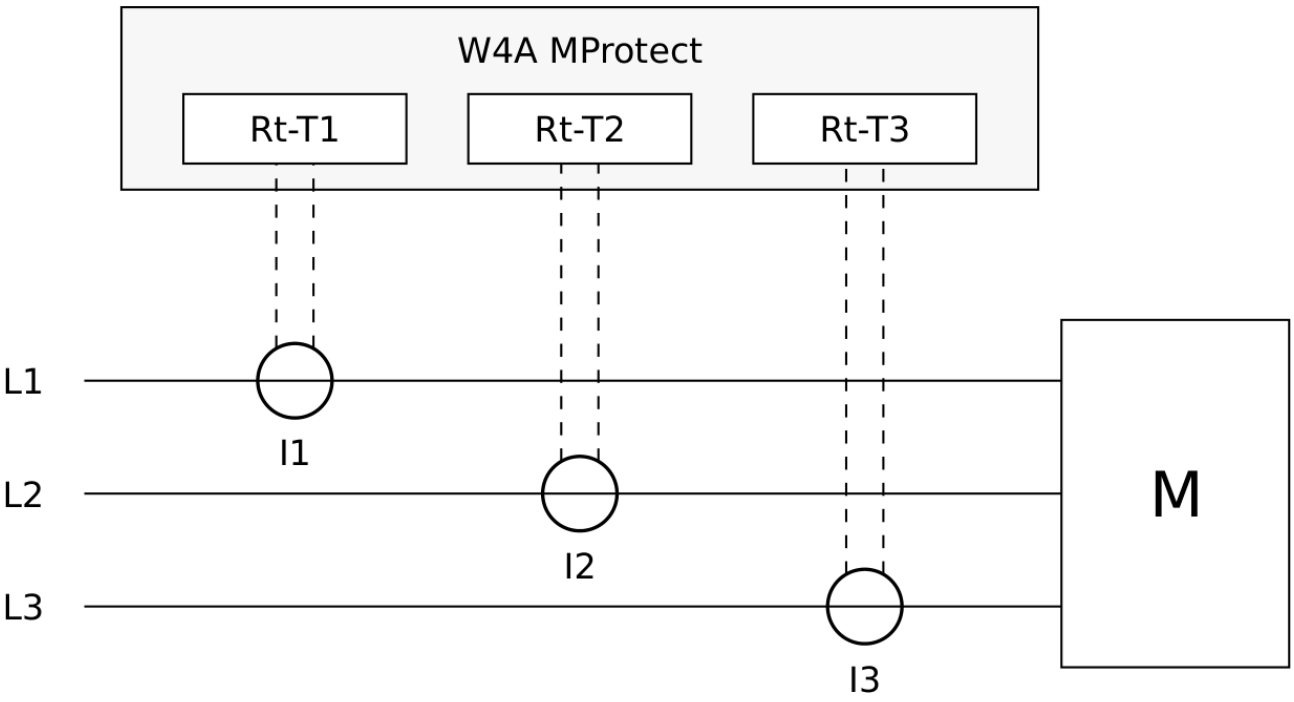


Figure 5.3: Connection of the three current sensors in three-phase mode.

5.13. Connecting sensors

Connect compatible sensors to A-Rs, B-Rs and C-Rs, or to other inputs available on the variant, retaining the identification used in the app. Protect wiring against damage and interference and test each input after connection.

Do not apply external voltage to inputs intended for dry contacts or impedance detection.

5.14. Sensor A input and use of the shunt

Depending on the model, input A-Rs provides a hardware interlock or cut-off function.

> **NOTE — What does hardware cut-off mean?**
>
> Hardware cut-off interrupts output operation through the electrical circuit, independently of the software. Use A-Rs for a contact whose opening must stop the load, such as the control contact associated with a pressure tank, when this behaviour is required.

When sensor A is not used, fit a shunt (jumper) only if the variant's diagram permits it. The jumper bypasses the interlock associated with input A; check that the installation retains the necessary protective measures. This connection must be made by qualified personnel with the supply switched off and isolated.

5.15. Using the OUT-OFF switch

The OUT-OFF switch physically enables or inhibits output operation. In position I, the motor may operate when all other conditions allow it. In position O, the relay control circuit is interrupted, preventing it from being energised.

Check both positions before commissioning. See 6.2 OUT-OFF switch for controls and resetting.

> **WARNING — Working on the installation**
>
> Before starting work, switch off and isolate all power supplies involved, prevent reconnection and verify the absence of voltage.

5.16. Expansion connector

The EXT connector is intended exclusively for modules or accessories authorised by W4A.

Do not connect unspecified equipment, power supplies, sensors or cables.

Connect only with the supply switched off and after confirming compatibility and connector orientation.

5.17. Final connection checks

Before first energising, check the correspondence between model, supply and terminals, motor and contactor compatibility, connection tightness and protection, installation of protective and isolation devices and equipment mounting. Also check current sensor connections and orientation, control inputs and authorised use of the A-Rs shunt.

Apply power for the first time with OUT-OFF in the inhibited position and with on-site supervision. Check indicators and connect to the app as described in 7 Installing the app and 8 Device pairing.

Identify the device and configure sensors, measurement mode, current limits and times, and timers. Once safe conditions are met, enable operation and perform a controlled test. Check correspondence between the command and load, current values, each sensor input and the OUT-OFF interlock.

Validate settings before making automatic operation available. Record connections and test results and provide the user with operating, stopping and support contact procedures.

6. Control panel

The control panel allows the W4A MProtect state to be checked locally and certain functions to be performed using the OUT-OFF switch and Connection button.

The layout of indicators and controls may vary by model. Check that the image matches the installed variant.



Figure 6.1: Control panel

6.1. Indicator lights

Observe whether each LED is on, off or flashing. The table describes normal operation; patterns for special modes are described in the following sections.

Indicator	Colour	State and meaning
OUT-ON	Green	**On:** output active. **Off:** output inactive.
Connection	Blue	**On:** active connection to the device. **Off:** no active connection. **Flashing:** pairing mode available.
Error	Red	**On:** waiting for the current reset delay to expire. **Off:** normal operation. **Flashing:** a condition prevents operation, such as an error, STOP-SW or OUT-OFF in position O.
A Sensor / B Sensor / C Sensor	Yellow	**On:** the corresponding input is closed. **Off:** the corresponding input is open.

Indicator	Colour	State and meaning
Power	Green	**On:** device powered. **Off:** no power indication; this does not prove the absence of voltage.

Unlit LEDs do not prove the absence of voltage. OUT-ON indicates the output command; in systems with a contactor, it does not confirm mechanical motor operation.

6.2. OUT-OFF switch

The **OUT-OFF** switch physically enables or inhibits operation of the output relay.

- **Position I — operation enabled:** the relay control circuit is available and W4A MProtect can activate the output when all other operating conditions are satisfied.
- **Position O — operation inhibited:** the relay control circuit is physically interrupted, preventing the output relay from being energised.

Setting the switch to position I does not necessarily start the motor immediately. It only enables output activation when sensors, timers, commands and other configured conditions allow it.

Setting the switch to position O physically prevents output relay activation, but:

- does not disconnect the W4A MProtect supply;
- does not necessarily interrupt all energy sources to the load;
- does not guarantee the absence of voltage at terminals;
- is not an isolation device;
- is not and does not replace an emergency stop;
- does not authorise electrical or mechanical work on the installation.

Before any work, switch off and isolate the supply using a suitable device, prevent accidental reconnection and verify the absence of voltage.

Resetting through OUT-OFF

When the device is in STOP-SW, reset or a recoverable error state, it may be possible to re-enable operation using the following sequence:

1. set the OUT-OFF switch to position I;
2. set it to position O;
3. repeat the I–O sequence within a maximum of 3 seconds;
4. use the LEDs or app to confirm whether the previous state has been cleared.

This sequence does not remove the cause of a persistent error.

Before resetting:

- identify the cause of the state;
- check that the installation can resume operation;
- check that nobody is in the hazardous area;
- confirm that the motor can start safely.

If the error state returns, do not repeatedly reset it; see chapter 12 Troubleshooting.

6.3. Connection button

The **Connection** button activates pairing mode and performs operations related to device communication. Its effect depends on the indication shown while the button is held and the point at which it is released.

To pair a new phone, follow chapter 8 Device pairing. Observe the Connection and Error LEDs before releasing the button.

Indication while the button is held	Action when the button is released
Only Connection LED on	Activates pairing mode for a new phone.
Connection and Error LEDs on	With OUT-OFF in position O (inhibited), deletes communication sessions saved with the device. To communicate again, press Connection again and repeat device pairing.
Neither LED on	Cancels the operation without making changes.

CAUTION — Deleting communication sessions

Communication sessions are deleted only if OUT-OFF is in position O (inhibited) when the button is released with the Connection and Error LEDs on. After deletion, phones must pair with the device again by pressing Connection. This operation does not delete functional settings or history.
This operation is not a complete factory reset.

The button can be locked through the app. If locked, use existing access to unlock it, as described in chapter 10 Device management and information. If no access is available, recovery requires a factory reset and new pairing.

6.4. Special indication modes

In addition to normal states, the **OUT-ON**, **Connection** and **Error** LEDs indicate special operations. In these modes, interpret the indicators together.

Factory reset mode

The **Error**, **OUT-ON** and **Connection** LEDs flash alternately. The device is waiting for factory reset confirmation using the Connection button.

> **CAUTION — Irreversible reset**
>
> Confirmation deletes all device data and settings, including pairings, sensors, current settings, timers and history. Keep the load inhibited until reconfiguration is complete. Do not confirm without recording the information required to configure the installation again.

See chapter 10 Device management and information for resetting through the app and appendix A Device reset and recovery for reset and recovery procedures.

Update mode

The **Error**, **OUT-ON** and **Connection** LEDs flash simultaneously. This indicates that the firmware is being updated.

During the update:

- do not disconnect power;
- do not press Connection;
- do not change OUT-OFF or the connections;
- do not interrupt communication required by the process.

Wait for the update to finish and normal indication to return. See chapter 10 Device management and information.

Indication while holding Connection

During normal operation, the Connection and Error LEDs indicate the operation that will be performed when the button is released, as shown in the table in the previous section.

When the device is powered on with Connection held down, the indication allows factory reset or firmware recovery to be selected. Follow the specific sequence in appendix A Device reset and recovery; do not apply the pairing table to that procedure.

If you do not recognise the pattern, record the indication and see chapter 12 Troubleshooting. Do not confirm an operation whose effect you do not understand.

7. Installing the app

7.1. Purpose

The W4A MProtect app allows device configuration, sensor, current limit and timer settings, command execution and installation monitoring.

This chapter describes phone preparation and app installation. Pairing the phone with the device is described in chapter 8 Device pairing.

> **NOTE**
>
> Installing the app does not complete device pairing or validate electrical connections or installation settings. Commissioning must follow chapter 5 Planning and electrical installation.

7.2. Mobile device requirements

Use a phone compatible with the W4A MProtect app and the communication interfaces required for the intended access. For a local connection, the phone must support compatible Bluetooth Low Energy.

Before installation or pairing, check:

- operating system compatibility, according to chapter 1 About this manual and the version shown in the official store;
- sufficient space to install the app;
- Internet access to obtain the app and updates;
- Bluetooth availability for local connection;
- sufficient battery charge to complete the procedure.

Remote access depends on communication conditions at the installation and phone, and on available services. Installing the app alone does not guarantee remote access.

7.3. Installing the app

Install the app through the official channels indicated by W4A. Use the manufacturer’s link or search for **W4A MProtect** in the operating system’s official store.

Before installing, check that you have selected the correct product app and verify the publisher identification in the store.

To install:

1. open the official app page in the store;
2. check phone compatibility;
3. install and wait for completion;

4. open the W4A MProtect app.

> **CAUTION — App source**
>
> Do not use modified versions, unauthorised copies or apps from unknown sources. Install only the app provided through the official channels indicated by W4A.

7.4. Required permissions

During installation or use, the app may request permissions needed for operation. Depending on the operating system and version, these may include:

- Bluetooth;
- nearby devices;
- location;
- local network access;
- storage, where applicable.

Grant the necessary permissions requested by the official app. Refusing communication permissions may prevent discovery, pairing or connection to W4A MProtect.

Location permission may be required on certain Android versions to discover Bluetooth devices.

If the app cannot communicate with the device, check permissions in the phone settings. Once granted, return to the app and retry the connection.

7.5. Preparing the first connection

A local connection establishes communication with W4A MProtect through Bluetooth Low Energy. Prepare the phone and move close to the device before pairing.

Enable Bluetooth, grant the required permissions and move close to the equipment, safely installed and powered.

Follow chapter 8 Device pairing to authorise and complete pairing. Do not hold physical controls down without consulting the relevant procedure.

> **WARNING — Possible operation during configuration**
>
> Before executing commands or changing settings, check that the installation can operate safely and that no work is in progress on the motor or controlled load.

7.6. Updating the app

Use the latest app version compatible with the phone. Obtain updates through the official channels indicated by W4A.

The installed version can be checked in the app settings, the app’s official store page or the phone’s app list, where available.

Update at a suitable time and wait for completion before resuming use. After updating, open the app and confirm installation access and device identification before executing commands.

If connection difficulties occur, see chapter 12 Troubleshooting. Do not delete pairings or reset device data without first checking the applicable instructions.

> **NOTE**
>
> Updating the phone app and updating the controller firmware are separate operations. Firmware management is described in chapter 10 Device management and information.

8. Device pairing

8.1. Purpose

Pairing establishes a connection between W4A MProtect and the app, authorising access to device functions through the phone. The process uses Bluetooth Low Energy and requires physical access to the equipment's **Connection** button.

Pair after completing installation and initial checks. Sensor, timer and monitoring function configuration is described in chapter 9 Device functional configuration.

> **NOTE**
>
> Pairing does not replace commissioning or installation functional tests. Completing local pairing also does not confirm remote access availability.

8.2. Prerequisites

Before starting, check:

- installation is complete and connections have been checked;
- the device is powered and shows no signs of abnormal operation;
- the W4A MProtect app is installed on a compatible phone;
- Bluetooth is enabled and required permissions have been granted;
- the phone is close to the equipment;
- you can access **Connection** and the button is not locked;
- no other user is performing pairing or an update;
- the installation is in a safe condition.

Pairing mode must be activated on the device so that the app can discover it. Do this while the app is searching for devices, following the sequence in the next section.

Phone preparation is described in chapter 7 Installing the app. Equipment controls and indicators are described in chapter 6 Control panel.

8.3. Starting pairing in the app

1. Open the app.
2. Select **Add device**.
3. Allow Bluetooth use if requested by the app.
4. Press the W4A MProtect **Connection** button for approximately 1 second, until the Connection LED lights up. Release the button and confirm that the LED flashes, indicating pairing mode.

5. Wait for pairing to finish.

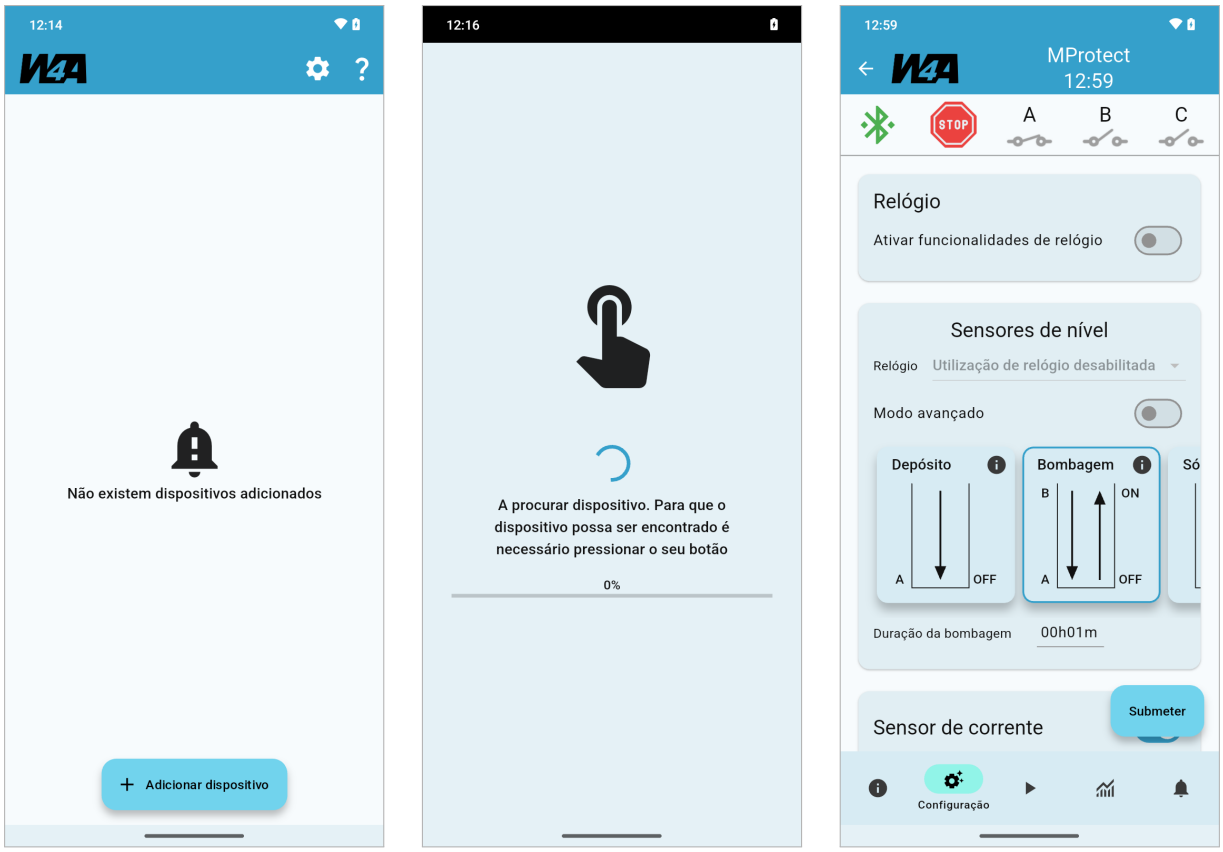


Figure 8.1: Device pairing sequence in the app.

8.4. Pairing not completed

If the device does not appear or the process does not finish, check:

- the equipment is powered;
- Bluetooth is enabled and required permissions have been granted;
- the phone is sufficiently close to the equipment;
- pairing mode has been activated and the **Connection** LED shows the corresponding indication;
- **Connection** is not locked;
- no other mobile device is connected to the equipment;
- no other pairing or update is in progress.

Correct the identified condition, close and reopen the app and repeat the pairing sequence. Consider obstacles and the electrical enclosure, which may hinder communication.

If the problem persists, record the stage at which the process stopped and the indication observed on the device. See chapter 12 Troubleshooting or request support, providing the model and available identification

details.

> **CAUTION — Deleting data and access**
>
> Do not delete pairings or perform a factory reset merely to retry a connection. These operations may remove access or settings and must follow their specific procedures.

8.5. Safety during pairing

Pair only with authorisation from the person responsible for the installation. Do not allow unauthorised people to use **Connection**, and always confirm the identity of the paired device. Protect the phone against unauthorised access.

Pairing does not authorise electrical or mechanical work. Before working on the installation, use the isolation methods described in chapter 2 Safety. Access sharing follows chapter 10 Device management and information.

9. Device functional configuration

W4A MProtect functional configuration is performed in the app's **Configuration** tab.

Before starting, check that you are connected to the correct device, that installation and sensor connections have been checked, and that you know the model and load operating mode. Keep the installation safe and confirm that no work is in progress.

> **WARNING — Automatic starting**
>
> Changing sensor, timer, current or analysis settings may allow the load to start automatically immediately after the settings are saved.

Before saving a configuration, confirm that the motor can start safely.

Settings affecting protection functions, current limits, sensors or installation safety must be defined or validated by qualified personnel. Timers may be changed by an authorised user within the limits established for the installation.

After each change:

1. review the displayed settings;
2. submit the configuration;
3. wait for app confirmation;
4. check that the values have been transferred to the device.

Do not leave the screen or interrupt communication while a configuration is being transferred.

9.1. Sensor configuration

Sensors allow motor operation to depend on the state of a reservoir, tank, well or equivalent system.

Sensor configuration works together with timers, automatic analyses and current monitoring. OUT-OFF, STOP-SW and other interlocks may prevent operation even when a sensor issues a run command.

Before configuration, check the correspondence between the physical sensors and inputs A, B and C.

Sensor states

The app displays each sensor state as closed or open.

The electrical and functional meaning of each state depends on:

- sensor type;
- the connection made;
- the presence or absence of liquid;
- the selected configuration.

Check the state displayed in the app by testing each sensor individually before enabling automatic operation.

Interaction with timers

This option is available when timer functionality is enabled.

Timer permission does not override a sensor stop command or interlock condition.

The following behaviours can be selected:

Motor switches on with timers

The motor can only be activated when both sensor and timer conditions permit operation simultaneously.

Motor switches on with timers or sensor

The motor can be activated when a run command is issued by timers or sensors.

Preset configurations

Preset configurations automatically apply common operating logic.

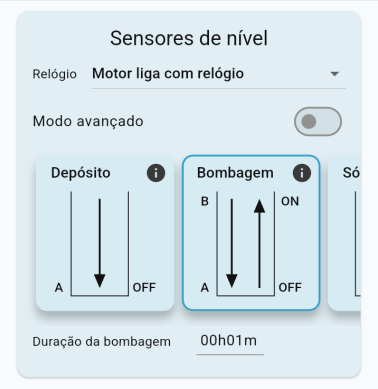


Figure 9.1: Level sensor preset configurations

Tank

This configuration prevents or interrupts motor operation when the liquid level falls below the defined minimum.

Sensor A must be installed near the minimum acceptable tank level.

The following may be used:

- a level sensor with an NO dry-contact output;
- a compatible impedance level probe.

When the level falls below sensor A, motor operation is interrupted.

Sensors B and C are not used in this configuration.

This configuration may reduce the risk of dry running, but does not replace independent protection where required by the risk assessment.

Pumping

This configuration automatically empties a tank between two levels.

Install sensor A at the lower level and sensor B at the upper level.

Compatible level sensors may use:

- an NO dry-contact output;
- impedance detection.

When liquid reaches sensor B, the motor is activated.

The motor keeps running until the level falls below sensor A.

Sensor C is not used in this configuration.

Pressure tank only

This configuration controls motor operation through a pressure sensor.

Sensor A must be a dry-contact pressure sensor compatible with the W4A MProtect input.

The sensor must behave as follows:

- **low pressure:** contact closed;
- **pressure restored:** contact open.

When pressure falls below the defined switching threshold, the sensor contact closes and the motor starts in pressure tank mode.

When pressure reaches the defined reset threshold, the contact opens and the motor no longer receives a run command from the pressure sensor.

Sensors B and C are not used in this configuration.

Pressure tank with sensor

This configuration combines a pressure sensor with a minimum level sensor.

Sensor A must be a dry-contact pressure sensor compatible with the W4A MProtect input.

The sensor must behave as follows:

- **low pressure:** contact closed;
- **pressure restored:** contact open.

When pressure falls below the defined switching threshold, sensor A closes and the motor starts in pressure tank mode.

When pressure reaches the defined reset threshold, the contact opens and the pressure sensor no longer issues a run command.

Install sensor B at the minimum tank level; it must interrupt motor operation when the level falls below the defined position.

Sensor C is not used in this configuration.

Advanced mode



Figure 9.2: Advanced level sensor settings

If the intended behaviour does not match any preset, use Advanced mode to configure each sensor’s actions and priority.

Advanced mode allows you to define:

1. actions associated with sensor states;
2. action duration after a state change;
3. priority between simultaneous states.

Available actions

No action

The selected state does not directly affect motor operation.

Motor switches off

When the selected state is detected, a motor stop command is issued. When used together with W4A Hidro, this action allows Hidro to continue operating in asynchronous mode.

Motor switches off with fault

When the selected state is detected, a motor stop command is issued. Unlike **Motor switches off**, this action does not allow W4A Hidro to operate in asynchronous mode.

Motor switches on

When the selected state is detected, a motor start command is issued, provided no higher-priority condition prevents operation.

50 % operation

This is only considered when the equipment operates together with W4A Hidro.

While the selected state remains active, the operating time scheduled by W4A Hidro is reduced to 50 %.

This option is available only for sensor C.

Action extension after a state change

Temporarily maintains a sensor’s associated action after its state is no longer active.

Define:

- the extension duration;
- the extended action;
- priority relative to other sensors.

A higher-priority stop command must interrupt the extension.

State priorities

When several states are active simultaneously, the device executes the action associated with the highest-priority state.

Order states so that stopping and protection conditions take priority over start commands.

After configuring priorities, test all relevant sensor combinations.

9.2. Current monitoring configuration

Current monitoring detects operating conditions outside configured limits and interrupts motor operation where applicable.

Current limits must be configured by qualified personnel, considering:

- motor rated current;
- starting current;
- number of phases;
- normal load conditions;
- acceptable variations;
- motor manufacturer recommendations;
- commissioning test results.

Incorrect values may cause unwanted stops or prevent abnormal conditions from being detected.

Measurement mode

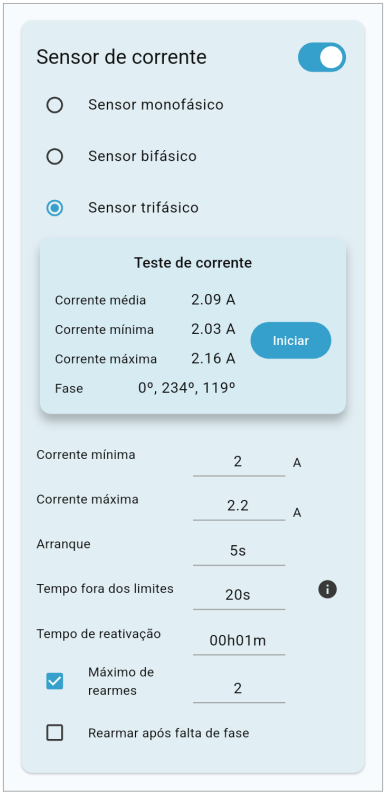


Figure 9.3: Current sensor settings

Select the mode corresponding to the installation:

Single-phase mode

The current measured on channel T1 is analysed.

Two-phase mode

The current measured on channel T1 is analysed. Use only one current sensor connected to Rt-T1, according to the diagram in 5.12 Installing current sensors.

Three-phase mode

The currents measured on channels T1, T2 and T3 are analysed.

Check that each sensor is assigned to the correct phase and channel.

Minimum and maximum current

Define the minimum and maximum acceptable limits during normal motor operation.

When measured current remains outside the configured range for the permitted time, operation is interrupted and the device records the corresponding condition.

Minimum current can be used to detect conditions such as no-load operation, an open circuit or no consumption, depending on the installation.

Maximum current can be used to detect conditions such as overload, mechanical blockage or excessive consumption.

These interpretations do not replace diagnosis of the actual cause.

Starting time

Starting time defines the period after activation during which normal current limits are not applied.

This period accommodates the motor’s starting current transient.

Set the shortest time that allows the motor to reach normal operation.

An excessive time may delay detection of an abnormal condition.

Time outside limits

Defines the accumulated time for which current may remain outside the configured range before operation is interrupted. The time counter increases while current is outside the limits and decreases according to the device logic when current returns to the normal range. When the configured time is reached, the motor is stopped and the event is recorded. This time counter is separate from the automatic restart counter.

Reactivation time

Defines the waiting time used for automatic restart attempts after certain anomalies. The actual delay depends on the anomaly, as described in 9.2 Automatic restart rules by anomaly. It must not be confused with the time outside limits.

Maximum number of automatic restarts

Select one of the following options for anomalies subject to the automatic restart counter:

- **Never restart:** the anomaly causes an error, with no automatic restart attempt.
- **Limited number:** attempts are allowed up to the configured limit. Once they are exhausted, the device

enters an error state and blocks further automatic attempts.

- **Always restart:** no limit is applied to the number of automatic attempts.

These options do not override the specific open-circuit, short-circuit and phase-loss rules in the following table.

These settings must be defined by qualified personnel. Repeated starting attempts may cause overheating or damage to the motor, contactor and installation.

Automatic restart after phase loss

This option determines whether automatic restart is allowed after phase loss, with or without an associated short circuit. If disabled, the device enters an error state without automatic restart. If enabled, the specific delays in the table and the restart-count setting apply, including the never-restart option.

These settings must be defined by qualified personnel. Repeated starting attempts may cause overheating or damage to the motor, contactor and installation.

Automatic restart rules by anomaly

Phase loss with an associated short circuit follows the phase-loss rule; it is distinct from a short circuit without phase loss.

Anomaly	Delay before an automatic attempt	Conditions and counter
Open circuit	Always 1 minute, regardless of the configured reactivation time.	Always restarts automatically. Not subject to the restart limit and does not increment the counter.
Short circuit	No automatic attempt.	Places the device in an error state, regardless of the restart settings.
High or low current	Configured reactivation time.	Follows the restart settings and counts towards the limit.
Low voltage during operation	Configured reactivation time.	Follows the restart settings and counts towards the limit.
Phase loss, with or without an associated short circuit	First restart: configured time. Second restart: the greater of the configured time and 1 hour. Third and subsequent restarts: the greater of the configured time and 24 hours.	Requires automatic restart after phase loss to be enabled. Follows the restart settings and counts towards the limit.

Clearing the delay and restart counter

While waiting for an automatic restart, the following operations clear the pending delay and reset the restart counter:

- submitting the current sensor settings;
- activating and then removing the STOP-SW pause;
- executing the clear-errors command in the app.

These operations do not correct the cause of the anomaly. After clearing, the device reassesses the operating conditions and may allow the motor to start before the previous delay would have expired.

> **WARNING — Possible start after clearing**
>
> Before submitting current settings, removing the pause or clearing errors, confirm that the cause has been corrected and that the load can start safely.

Clearing after anomaly-free operation

Warnings and the restart counter are cleared automatically once the motor has operated continuously without anomalies for a period equal to:

Time outside limits + starting time + 10 seconds

The times configured in the current sensor settings are used. Expiry of the restart delay alone is not sufficient: the motor must run without problems throughout this interval.

Current test

The **Current test** function displays the motor's current consumption in real time during controlled operation.

The resulting values can be used as a reference to configure:

- minimum current;
- maximum current;
- starting time;
- other current monitoring settings.

The test must only be performed by qualified personnel with the motor under normal operating conditions.

> **WARNING — Motor starting**
>
> Running this test operates the motor.

Before starting, confirm that:

- the motor and load can operate safely;

- nobody is working on the equipment;
- mechanical guards are installed;
- current sensors are correctly mounted;
- the selected measurement mode matches the installation;
- OUT-OFF is in the enabled position;
- there are no errors or other interlock conditions.

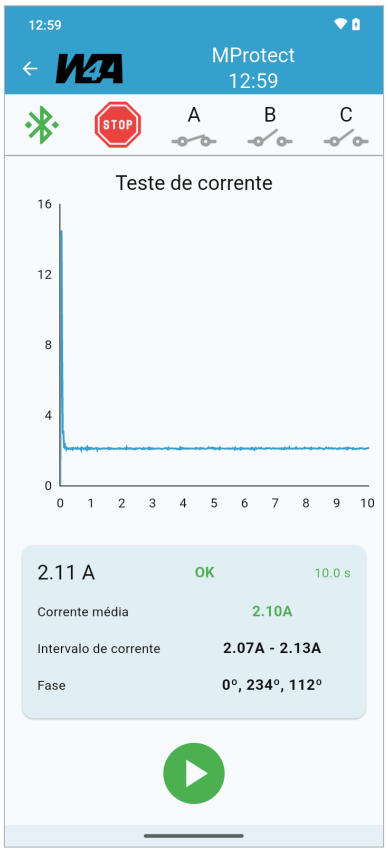


Figure 9.4: Current test

To run the test:

1. open the current sensor settings;
2. select **Current test**;
3. check that the displayed channels match the phases used;
4. hold **Play** to operate the motor;
5. observe the displayed current values;
6. release **Play** to end operation;
7. wait for the recorded values to be displayed.

During the test, depending on the selected mode, the app displays:

- instantaneous current;
- minimum current;
- average current;
- maximum current.

The motor operates only while **Play** is held down. Releasing the button sends a command to interrupt operation.

Play is not an emergency stop device or a means of electrical isolation.

Interpreting values

During starting, it is normal for current to be temporarily higher than during steady operation.

When configuring settings, consider separately:

- starting current;
- steady-state current;
- current variation during operation;
- differences between monitored channels;
- normal load conditions.

Do not set limits solely from an instantaneous value.

Whenever possible, repeat the test under different normal operating conditions and compare results with:

- the rated current on the motor nameplate;
- manufacturer documentation;
- load characteristics;
- installed external protective devices.

A zero, unstable or clearly different reading between channels may indicate:

- an incorrectly installed current sensor;
- an incorrectly selected channel;
- a conductor not passing through the sensor;
- unsuitable orientation or positioning;
- phase loss;
- a connection fault;

- abnormal motor operation.

Do not change limits to hide an abnormal reading without first identifying its cause.

Setting limits

After testing, enter minimum and maximum current values suitable for the installation.

Minimum current must distinguish normal operation from insufficient consumption or no-load conditions.

Maximum current must accommodate normal operating variations while still identifying excessive consumption.

Starting time must allow the motor to reach normal speed, but must not be longer than necessary.

Test limitations

The current test does not replace:

- checking the motor nameplate;
- manufacturer technical documentation;
- measurement using suitable instruments;
- checking external protective devices;
- technical assessment of the installation.

Do not deliberately cause short circuits, overloads, mechanical blockages or phase loss to validate W4A MProtect operation.

Disabling current monitoring

Current monitoring can be disabled where this option is available.

> **WARNING — Protection function disabled**
>
> With current monitoring disabled, W4A MProtect does not interrupt operation based on configurable minimum and maximum limits.

This option must only be used by qualified personnel after risk assessment and where suitable external protective devices are present.

9.3. Timer configuration

Timers allow motor operation to be enabled, restricted or started during predefined periods.

Before creating schedules, check:

- device date and time;

- time zone;
- clock backup battery condition;
- interaction with sensors;
- priority relative to interlock and protection conditions.

Schedules do not override:

- the OUT-OFF interlock;
- STOP-SW;
- current errors;
- sensor conditions configured to inhibit operation;
- other higher-priority conditions.

Enabling timers

When enabling this function, check the displayed date and time.

Where available, synchronise the clock with the mobile device or network service.

An incorrect time may cause operation at unintended times.

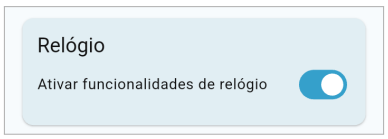


Figure 9.5: Enabling timers

Timer behaviour

Periods ending on the following day

When the end time is earlier than the start time, the period extends into the following day.

For example, a schedule starting at 22:00 and ending at 06:00 is active from 22:00 on the selected day until 06:00 the next day.

The selected day is the day on which the period starts.

Sensor conditions, protection functions, OUT-OFF and STOP-SW continue to take priority throughout the scheduled period.

Overlapping timers

When two or more timers permit operation during overlapping periods, these periods are treated as continuous permission to run.

Transitioning from one timer to another does not necessarily stop and restart the motor.

The motor remains enabled while at least one active timer permits operation and no higher-priority interlock or stop condition exists.

Example:

- Timer 1: 08:00–10:00;
- Timer 2: 09:30–11:00.

Permission to run remains continuous from 08:00 to 11:00.

Conflicting commands

When run and stop commands are present simultaneously, the stop command takes priority.

Protection and interlock conditions take priority over start commands, including:

- OUT-OFF in the inhibited position;
- STOP-SW active;
- current error;
- reset waiting period;
- sensor-defined stop condition;
- automatic analysis preventing operation;
- any other applicable interlock condition.

An active schedule cannot start the motor while one of these conditions remains.

After the interlock condition clears, the device reassesses sensors, timers and other settings before deciding whether operation can resume.

Device powered on during an active period

When W4A MProtect is powered on or restarted during an already active scheduled period, it retrieves saved settings and assesses current operating conditions.

The motor may be activated if:

- the scheduled period is still active;
- sensors permit operation;
- there is no error or reset waiting period;
- OUT-OFF is in the enabled position;
- STOP-SW is not active;
- all other configured conditions allow operation.

Restoring power may therefore start the load automatically.

> **WARNING — Starting after power restoration**
>
> Before restoring power, confirm that the motor can start safely and nobody is working on the load or installation.

If the clock shows an invalid date or time after restarting, time schedules must not be considered valid until the clock has been synchronised again.

Weekly timers

Weekly timers define operating periods associated with specific days of the week.

For each timer, configure:

- days of the week;
- start time;
- end time.



Figure 9.6: Weekly timers

Repeating timer

The repeating timer executes operating cycles at a defined interval.

Configure:

- operating duration;
- start time;
- repeat interval.



Figure 9.7: Repeating timer

Advanced mode

Advanced mode allows several independent timers to be created and managed.

Configure:

- start time;
- end time;
- timer type;
- continuous or intermittent operation.

Weekly timer

In **Weekly** mode, the timer repeats on the selected days of the week.



Figure 9.8: Advanced weekly timer

Cyclic timer

In **Cyclic** mode, the timer repeats according to a user-defined interval of days.

Configure:

- number of days between repetitions;
- cycle start date used as the calculation reference.



Figure 9.9: Advanced cyclic timer

Continuous operation

When **Intermittent operation** is disabled, the timer maintains the run command throughout the configured schedule.

Intermittent operation

When **Intermittent operation** is enabled, the scheduled period is divided into successive operating and rest cycles.

Configure:

- **ON** — operating period duration;
- **OFF** — rest period duration.

Example: with ON set to 5 minutes and OFF to 5 minutes, the device alternates between 5 minutes of operation and 5 minutes of rest during the configured schedule.

9.4. Automatic operating analyses

Automatic analyses compare motor operation against previously configured limits or patterns.

Depending on the analysis, the system may:

- record an event;
- display a warning;
- send a notification;
- interrupt operation;
- place the device in STOP-SW.

Analyses complement, but do not replace, electrical and mechanical protective measures.

Incorrect configuration may cause unwanted warnings or interruptions.

Automatic STOP-SW behaviour

When an analysis places the device in STOP-SW:

- motor operation is paused by software;
- new run commands are inhibited;
- the event is recorded;
- the condition is shown in the app;
- a notification may be sent, where configured.

STOP-SW is not electrical isolation or an emergency stop.

Before clearing STOP-SW, identify the cause and confirm that the motor can safely resume operation.

Time window analysis

Time window analysis defines minimum and maximum motor operating times within a specified period.

Configure:

- window duration;
- expected minimum time;
- maximum permitted time;
- action when the maximum time is exceeded.

When the maximum time is exceeded, the system may interrupt operation and place the device in STOP-SW.

When the minimum time is not reached, the system records the event and sends a warning or notification.



Figure 9.10: Time window analysis

Operating pattern analysis

Pattern analysis uses an earlier period as a reference for comparing future operation.

To configure:

1. select the reference period;
2. check that its data represents normal operation;
3. define the acceptable tolerance;
4. select daily or weekly repetition;
5. define the action in the event of a deviation.

Do not use a reference period containing faults, maintenance, exceptional operation or incomplete data.

Changes to the motor, sensors, process or schedule may make the previous pattern unsuitable. After a significant change, review or recreate the reference.



Figure 9.11: Operating pattern analysis

9.5. Saving and applying settings

Changes in the **Configuration** tab are applied only after submission. Review sensors and priorities, current mode and limits, starting and reset times, timers and automatic analyses.

Submission and confirmation

Check that you are connected to the correct device, select **Submit** and wait for confirmation without closing the app or interrupting communication. Check the saved values again and confirm that they match those intended.

Failure while saving

If the connection fails, do not assume the configuration has been applied. Restore communication, check saved settings and repeat submission only where necessary.

Functional validation

Test changed functions under controlled conditions: sensors and priorities, timer interaction, current limits and times, resets and automatic analyses. Also check STOP-SW and behaviour after power restoration. Visual confirmation of values does not replace these tests.

Authorised changes

Settings affecting protection functions, automatic starting or electrical limits must be defined or validated by qualified personnel. Timers may be changed by an authorised user within the conditions established for the installation.

10. Device management and information

The app’s **Information** tab allows you to view and change general W4A MProtect data, configure communication, check installed versions and manage certain access and maintenance options.

Available options may vary depending on:

- the model;
- the firmware version;
- the app version;
- user permissions;
- associated services.

Before changing a setting, check that the app is connected to the correct device.

10.1. Identification and general data

The identification section defines the data used to recognise W4A MProtect in the app and records.



Figure 10.1: Identification and general data

Device name

The **Device name** field shows the W4A MProtect Bluetooth name. Use the edit icon beside the field to change it.

Use a name that distinguishes the equipment from other devices in the same installation.

Identification in the app

Defines the name shown to the user in the app.

Use an identification related to the motor’s function or location, for example:

- Well pump;
- Main tank pump;
- Ventilation motor;
- Panel 2 — Motor 1.

Avoid generic names where several devices are present.

Region and time zone

Defines the region and time zone used by the device for:

- the internal clock;
- timers;
- event logging;
- history;
- time-based analyses;
- displaying dates and times.

Check that the region and time zone are correct before configuring timers.

Incorrect configuration may cause operation at unintended times.

10.2. Reference values for estimates

The app allows reference values to be entered to estimate costs and consumption shown in the history.

These values do not directly change motor operation.

Electricity price

Enter the electricity price in **€/kWh.**

This value estimates the electricity cost associated with the consumption shown in the history.

Water price

Enter the water price in **€/m³.**

This value estimates the water cost associated with system operation.

Water flow rate

Enter the estimated installation flow rate in **L/min.**

This value estimates the volume of water moved during motor operating time.

> **NOTE — Estimated values**
>
> Costs and consumption shown by the app are indicative values calculated from the entered settings and available operating data.

These values:

- do not replace certified meters;
- must not be used for billing;
- may differ from actual consumption;
- depend on the accuracy of the price, flow rate and other entered values.

Where installation flow varies with pressure, hydraulic head, wear or other conditions, estimated water consumption may deviate significantly.

10.3. Communication methods

W4A MProtect can communicate with the app through Bluetooth Low Energy, a local Wi-Fi connection and, when the relevant service is active, remote communication over the Internet.

Bluetooth communication

By default, the device allows local Bluetooth communication.

Bluetooth communication requires the mobile device to be within W4A MProtect range.

Actual range may be reduced by:

- metal enclosures;
- walls;
- obstacles;
- electromagnetic interference;
- mobile device characteristics.

Wi-Fi communication

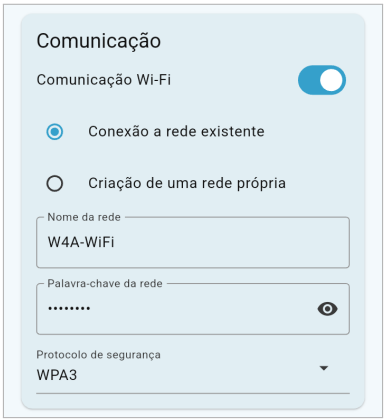


Figure 10.2: Wi-Fi communication

To enable Wi-Fi communication:

1. open the **Information** tab;
2. select **Wi-Fi communication**;
3. choose the required network mode;
4. enter the requested settings;
5. submit the configuration.

Connecting to an existing Wi-Fi network

This is the recommended mode where a suitable Wi-Fi network is available at the installation site.

Enter:

- network name;
- password;
- security protocol or method, where requested.

The network must:

- operate in the 2.4 GHz band;
- provide adequate coverage;
- be password protected;
- use a compatible security method;
- not rely on a captive portal;
- allow access to required services.

After configuration, the mobile device must connect to the same network as W4A MProtect to establish local Wi-Fi communication.

Creating a Wi-Fi network on the device

Where no suitable Wi-Fi network exists, W4A MProtect can create its own network.

In this mode, configure:

- network name;
- password;
- security method, where available.

The device-created network is primarily intended for local communication.

Use this mode only when:

- no suitable network exists at the site;
- local access is sufficient;
- the mode’s limitations are compatible with the installation.

When connected to the network created by W4A MProtect, the mobile device may lose normal Internet access or use another available connection, depending on the operating system.

Use a strong password and do not share credentials with unauthorised people.

Remote communication

Remote communication allows access to W4A MProtect over the Internet without the mobile device being connected to the equipment’s Wi-Fi network.

This function depends on purchasing or subscribing to the remote communication service provided by W4A. After the service is purchased, an access key is supplied to the customer; enter it in the app to associate the service with the device.

To activate the remote communication service:

1. configure W4A MProtect to connect to a Wi-Fi network with Internet access;
2. purchase or subscribe to the remote communication service;
3. obtain the access key supplied for the service;
4. in the app, open the **Information** tab;
5. select **Remote communication**;
6. enter the access key;
7. select **Activate** and wait for activation confirmation.

For remote communication to be available:

- W4A MProtect must connect to a Wi-Fi network with Internet access;
- the mobile device must have Internet access;
- the service must be active and within its validity period;
- the access key must be valid and correctly associated with the device;
- W4A communication services must be available.

Entering remote communication mode

The app preferentially attempts to establish local communication with W4A MProtect.

The remote communication button is available only when the app cannot establish local communication with the device and the remote service is active.

Remote communication does not start automatically. To enter this mode, the user must explicitly select the remote communication button displayed in the app.

Once selected, the app routes messages over the Internet.

Leaving remote communication mode

To leave remote communication mode, the user can:

- press the communication status icon in the app; or
- leave the device menu and open it again.

When the device menu is reopened, the app attempts local communication again. The remote communication button reappears only if local communication cannot be established.

Functions available remotely

Remote communication allows device state checks and use of functions provided by the app.

Where permitted by the app, certain operating settings can also be changed remotely, including:

- timers;
- automatic analyses.

Being able to change these settings remotely does not remove the need to check that changes do not create hazardous starting, stopping or operating conditions for the controlled load.

> **CAUTION — Remote configuration limitations**
>
> Settings identified as critical to protection of the motor, controlled load or installation cannot be changed through remote communication.

Configure these settings through local communication with W4A MProtect and, where applicable, have qualified personnel do so after checking installation conditions.

The following settings cannot be changed remotely:

- current protection limits and criteria;
- system behaviour in the event of sensor failures;
- interlock, enabling or reset conditions;
- other functions identified by the app as safety settings.

Remote communication does not replace on-site presence, functional tests or technical inspection of the installation.

Data routing and storage

The remote communication service acts solely as an intermediary to route messages between the app and W4A MProtect.

The service does not store user data or retain a history of routed messages.

> **NOTE — Communication availability**
>
> Remote communication may be temporarily unavailable due to:
>
> - Wi-Fi network failures;
> - loss of Internet access;
> - communication service unavailability;
> - expiry or deactivation of the purchased service.

Loss of remote communication does not imply equipment stopping. W4A MProtect may continue executing locally saved settings, protections, timers and automatic functions.

10.4. Checking versions

The **Versions** section shows technical information about the device and app.

It may display:

- model;
- serial number;
- hardware version;
- firmware version;
- other technical information.

Check versions before updating or using instructions specific to a particular manual revision.

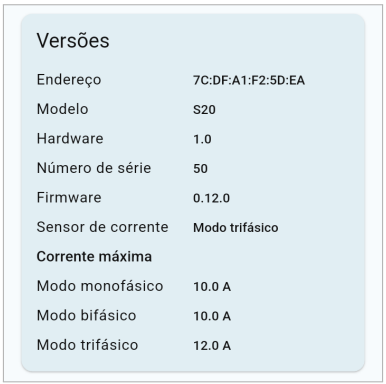


Figure 10.3: Checking versions

10.5. Locking the Connection button

Block button access prevents authorisation of new pairings through Connection. Before enabling it, confirm that you retain authorised app access.

Lock and unlock using the same app option. If no access is available to unlock the button, a factory reset is required, as described in A Device reset and recovery; this deletes data and settings.

10.6. Sharing access

Share device access provides access through a file or QR code, allowing the device to be added without pressing Connection. Check authorisation from the person responsible for the installation and the recipient's identity before sharing.

For a local connection, the recipient's phone must be close to W4A MProtect and have the required communication permissions.

> **CAUTION — Shared access**
>
> There is no option to revoke shared access. Provide the file or QR code only to authorised people and prevent its disclosure or forwarding.

Inform the recipient about the controlled load and precautions required before executing commands or changing settings.

10.7. Updating firmware

Update device installs a firmware version provided by W4A.

Updates may include:

- operating fixes;
- security improvements;
- new functions;

- compatibility changes;
- communication improvements.

Before starting:

- place the load in a safe condition;
- prevent unexpected starting;
- ensure a stable power supply;
- keep the mobile device within the required range;
- check Internet access where required;
- ensure nobody else is configuring the device.

During the update:

- do not disconnect power;
- do not restart the device;
- do not change connections;
- do not press Connection;
- do not close the app;
- do not interrupt communication.

During the process, the LEDs may show the update mode described in 6.4 Update mode.

After updating:

1. check the installed version;
2. check sensor settings;
3. check current limits;
4. check the clock and timers;
5. check automatic analyses;
6. validate input and output operation;
7. perform the applicable tests.

If the update is interrupted or the device does not resume normal operation, keep the load safe and contact technical support.

10.8. Factory reset

Restore factory data deletes all W4A MProtect data and settings and restores the original configuration. Use only when necessary and with authorisation from the person responsible for the installation.

Before starting, make the motor safe and record the information needed for reconfiguration, including sensors, current settings, timers, automatic analyses and communication.

> **WARNING — Data deletion**
>
> Resetting deletes data, settings, access and history. Keep OUT-OFF in the inhibited position until pairing, configuration and operating checks have been completed again.

A reset started in the app requires confirmation using the equipment's **Connection** button. App and panel procedures, including recovery when access is unavailable, are described in appendix A Device reset and recovery.

10.9. Submitting and checking changes

After reviewing editable fields, tap **Submit** and maintain communication during transfer. Check the data again to confirm that changes have been saved on the device.

Check identification, region, time zone and values used for consumption and cost estimates. If Wi-Fi data is changed, also check the connection to the intended network.

Sharing, locking, updating, resetting and remote service renewal have their own procedures. Follow the instructions displayed when selecting each option. Saving functional settings for sensors, current, timers and analyses is described in 9.5 Saving and applying settings.

11. Functional checks and troubleshooting through the app

11.1. Purpose

This chapter describes the functional checks to perform through the app after installing, configuring or maintaining W4A MProtect.

These checks are intended to confirm:

- device communication;
- input and sensor states;
- current measurement;
- output operation;
- OUT-OFF switch operation;
- STOP-SW operation;
- application of settings;
- the absence of abnormal errors or warnings;
- correct event logging.

These checks do not replace electrical inspection of the installation, checking external protective devices or the tests required for the machine or complete system.

Before starting any test, confirm that the load can start and stop safely.

11.2. Prerequisites

Before performing functional checks, confirm:

- the electrical installation has been completed and inspected;
- external protective devices are installed;
- the model and electrical diagram are compatible;
- sensors are correctly connected;
- current sensors are correctly installed;
- the device is paired with the app;
- the firmware version is suitable;
- settings have been saved on the device;
- there are no people or obstacles in the hazardous area;
- an external means of switching off and isolation is accessible.

Do not perform tests that could cause hazardous load operation.

11.3. Checking communication

Open the device in the app and confirm:

- the displayed state is current;
- there is no communication loss indication;
- values are being updated;
- Bluetooth communication works close to the device;
- Wi-Fi or remote communication works, where used;
- the device date and time are correct.

If data is not updated:

- check that the device is powered;
- check that Bluetooth or Wi-Fi is enabled;
- move the mobile device closer to W4A MProtect;
- refresh the screen;
- see chapter 12 Troubleshooting.

Loss of communication does not necessarily stop the load.

11.4. Checking the general state

Check the status bar and the device’s current state.
Check:

- the operating state;
- output states;
- OUT-OFF switch state;
- STOP-SW state;
- sensor states;
- the presence of errors or warnings;
- measured current;
- the source of the run command, where displayed.

The displayed state must match the actual installation condition.

If the app and the physical system state differ, stop commissioning and check settings, connections and communication.

11.5. Checking sensors

Test each sensor used individually.

For each sensor:

1. place the system in a safe condition;
2. physically change the sensor state;
3. confirm the corresponding change in the app;
4. check that the open or closed state is interpreted correctly;
5. confirm the function associated with the sensor;
6. restore the sensor to its normal condition;
7. check the displayed state again.

If a sensor’s behaviour is reversed, do not simply change the app logic without first checking the contact type and electrical installation.

11.6. Checking output operation and current measurement

Confirm that the load can start safely and there are no errors, interlocks or conditions preventing operation.

Set OUT-OFF to position I and send a run command through the app, or create the intended operating condition.

Check:

- the app shows the output as active;
- the output relay operates;
- the external contactor operates, where applicable;
- the load starts operating;
- current values appear on the channels used;
- each phase, current sensor and displayed channel correspond correctly;
- there are no swapped channels, unexplained zero values or abnormal differences between phases.

Then send or trigger a stop command and confirm:

- the app shows the output as inactive;
- the output relay is de-energised;

- the external contactor releases, where applicable;
- the load stops as intended.

The check is complete when the app state matches the actual output state, the load responds correctly to run and stop commands and current values are consistent with the installation.

If the result is not as expected, stop the test and check:

- the output connection;
- the external contactor and its coil;
- the selected control mode;
- current sensor installation and orientation;
- correspondence between phases, sensors and channels;
- the presence of active errors, interlocks or stopping conditions.

Do not continue commissioning until the cause of the anomaly has been identified and corrected.

11.7. Checking the OUT-OFF switch

Check operation in both switch positions.

Position I — operation enabled

With the switch in position I:

- confirm that the app shows operation as enabled;
- confirm that the device can activate the output relay when all other conditions are satisfied;
- check the response when switching to position I, bearing in mind that the load may start if a run command is present and all other conditions are satisfied.

Position O — operation inhibited

With the switch in position O:

- confirm that the app shows operation as inhibited;
- confirm that the output relay control circuit is physically interrupted;
- confirm that the output relay is not energised;
- confirm that the state or event is recorded, where available.

OUT-OFF is not an isolation device or an emergency stop.

11.8. Checking STOP-SW

Enable STOP-SW through the app and check:

- the displayed state changes;
- operation is interrupted or inhibited according to the configuration;
- the corresponding indication appears in the status bar;
- behaviour after deactivation.

Disabling STOP-SW must not cause unexpected starting unless the configured behaviour and other conditions explicitly allow restarting.

Before disabling STOP-SW, confirm that the motor can start safely.

STOP-SW is not electrical isolation or an emergency stop.

Activating and then removing the pause also clears a pending restart delay and resets the counter, as described in 9.2 Clearing the delay and restart counter. Starting may occur before the previous delay would have expired.

11.9. Checking timers

Timers may be configured by the installer or an authorised user.

After any change, check:

- configured run and stop times;
- the number of cycles, where applicable;
- the timer starting condition;
- behaviour at the end of the cycle;
- interaction with sensors;
- priority of errors, warnings and interlocks;
- OUT-OFF and STOP-SW still prevent operation where applicable;
- the configuration has been correctly saved on the device.

Perform a controlled test and confirm that the load operates and stops at the intended times.

11.10. Checking errors and warnings

Open the error and warning tabs.

Confirm that:

- there are no active errors with unidentified causes;

- current limits are suitable for the load;
- warnings match actual conditions;
- reset counts and timers are correctly configured;
- messages disappear or change state after the cause is corrected, according to the intended behaviour.

Do not clear or reset an error without identifying its cause.

When a current warning becomes an error after the maximum number of resets, check the load, supply, current sensors and configured limits before allowing further operation.

For anomalies subject to the counter, check that a warning changes to an error when the allowed restarts are exhausted. Open circuits, short circuits and phase loss have specific rules in 9.2 Automatic restart rules by anomaly. Clearing errors in the app resets the counter and clears the pending delay. After continuous anomaly-free operation, warnings and the counter are cleared under the conditions in 9.2 Clearing after anomaly-free operation.

11.11. Checking notifications

Open Notifications and confirm:

- warnings and errors generate the intended notification;
- repeat intervals match the configuration;
- notifications stop repeating when the condition ends, where applicable.

Notifications do not replace on-site supervision or physical protective devices.

11.12. Checking history

After testing, check that history records:

- operations and stops;
- sensor states;
- current;
- STOP-SW;
- OUT-OFF switch interlock;
- errors and warnings;
- power failures, where applicable.

Check that record dates and times are correct.

Incomplete or delayed records may result from communication, power or synchronisation failures.

11.13. Acceptance criteria

Functional checks may be considered complete when:

- communication works correctly;
- all sensors show the expected states;
- current measurement is consistent;
- OUT-OFF correctly enables and inhibits relay activation;
- STOP-SW works as intended;
- manual operation matches the command sent;
- the selected operating mode executes the correct sequence;
- timers and schedules are applied;
- there are no unexplained errors or warnings;
- events are recorded;
- the load stops under the intended conditions;
- no unexpected starting occurs.

If any criterion is not met, do not hand the installation over to the user until the cause has been identified and corrected.

12. Troubleshooting

This chapter describes problems that may occur during W4A MProtect installation, configuration or use, their possible causes and recommended actions.

Before contacting technical support:

1. check the current state in the app;
2. check panel LEDs;
3. check errors, warnings and notifications;
4. view history for the period when the problem occurred;
5. perform only checks that can be carried out safely.

WARNING — Electrical hazard

Before any electrical checks, wiring changes, terminal tightening or opening the enclosure:

- switch off the supply;
- isolate all energy sources;
- prevent accidental reconnection;
- verify the absence of voltage;
- follow applicable safety procedures.

Work on the electrical installation must be carried out by qualified personnel.

12.1. Troubleshooting table

The listed causes are diagnostic possibilities. Confirm the cause before changing settings or working on the installation.

Power supply and clock

Problem	Possible cause	Recommended action
Device does not power on	No power supply	Check supply voltage at the specified terminals and the external protective device.
	Incorrect supply voltage	Check that the applied voltage is compatible with the installed model.
	Loose conductor, incorrectly connected terminal or tripped protective device	Switch off and isolate the supply. Check wiring, terminal tightness and external protective devices.
	Internal failure	Disconnect the equipment and contact technical support. Do not attempt device repairs.
Device restarts unexpectedly	Supply failure or voltage drop	Check supply stability and power failure history.
	Poor supply connection	Switch off and isolate the installation and check conductors and terminals.
	Electrical interference or disturbance	Check separation between power and signal circuits, contactor installation and applicable suppression devices.
Device operates intermittently	Unstable supply	Check supply voltage and power failure records.
	Poor connection	Check terminals, connectors and wiring after switching off and isolating the supply.
	Sensor, timer or analysis settings	Check history and identify which conditions are switching the motor on and off.
Device lost date or time	Internal battery low, removed or discharged	Check battery state and replace it as described in appendix B Replacing the internal battery.

Pairing and communication

Problem	Possible cause	Recommended action
Cannot establish communication	Device outside Bluetooth range	Move the mobile device closer to W4A MProtect and reduce obstacles between them.
	Bluetooth or Wi-Fi disabled on the mobile device	Enable the required communication method and check app permissions.
	Missing app permissions	Check Bluetooth, nearby device, network and location permissions where required by the operating system.
	Outdated app	Update to a compatible app version provided by W4A.
Cannot establish Wi-Fi communication	Incorrect network or invalid credentials	Check the configured network name, password and security method.
	Insufficient coverage	Check signal strength at the installation site and move the access point closer where necessary.
	Mobile device connected to another network	For local access, check that the mobile device and W4A MProtect are on the appropriate network.

Control sensors

Problem	Possible cause	Recommended action
Sensor not detected	Incorrect connection	Check the sensor connection to the corresponding A, B or C input.
	Incompatible sensor	Check that sensor type and electrical characteristics are compatible with W4A MProtect.
Sensor shows the opposite state to that expected	Incorrect interpretation of open or closed contact	Check the sensor’s electrical state and the action assigned to each state in the settings.
Sensor state is unstable	Poor contact, interference or faulty sensor	Check wiring, terminal tightness, cable routing and sensor operation.

Current measurement

Problem	Possible cause	Recommended action
Current reading is zero	Motor is not being operated	Check that a run command is present.
	Incorrectly installed current sensor	Check that the correct conductor passes through its sensor and the channel is configured.
	Incorrect channel	Check measurement mode and correspondence between T1, T2 and T3.
Current reading is unstable or inconsistent	Incorrect sensor or connection	Check sensor mounting and compare readings with a suitable measuring instrument.

Motor and power circuit

Problem	Possible cause	Recommended action
Output not activated	OUT-OFF switch interlock	Set OUT-OFF to the enabled state only after confirming that the motor can start safely.
	STOP-SW active	Clear STOP-SW after checking the installation and cause of the pause.
	Active error or maximum resets reached	Check earlier warnings, identify the cause and clear the error only after correcting it.
	Reset waiting time	Wait for the delay applicable to the anomaly or follow the specified intervention procedure.
	Sensor issuing a stop command	Check sensor states and priorities.
	Outside the configured schedule	Check time, time zone and timers.
	Limit or automatic analysis	Check warnings, history and analysis settings.
Motor shown on, but not running	Contactor or power circuit fault	Switch off and isolate the supply and check the contactor, protective devices and power circuit.
	External protective device tripped	Identify and correct the cause before resetting the protective device.

Problem	Possible cause	Recommended action
Motor runs unexpectedly	Active timer, sensor or manual operation	Check current state and history to identify the command source.
	Welded contactor or power circuit fault	Immediately switch off and isolate the installation and request qualified personnel.

Timers and configuration

Problem	Possible cause	Recommended action
Expected function not performed	Incorrect or unsubmitted configuration	Review settings and check that the app confirmed successful saving.
	Simultaneous conditions with different priorities	Check the status bar to identify the highest-priority condition.
Timers do not work	Invalid date or time	Synchronise the clock and check region and time zone.
	Timer disabled or not submitted	Check that the timer is active and the configuration was saved.
	An interlock condition exists	Check OUT-OFF, STOP-SW, errors, sensors and other priority conditions.
No response after a change	Incomplete configuration transfer	Reconnect and check the values currently saved on the device.
	Settings incompatible with intended operation	Review only recently changed settings and restore previous values where known.

Consumption and estimates

Problem	Possible cause	Recommended action
Water consumption does not match the actual value	Incorrect or variable configured flow rate	Check the entered value and consider actual installation flow variations.
Displayed cost is incorrect	Incorrect configured price	Check electricity and water prices in Information.

12.2. Resetting after an anomaly

An anomaly may interrupt operation, start a restart delay or place the device in an error state. Before clearing an error or bringing an attempt forward, check the notification and records, ask the installer to perform the necessary checks, and confirm that the cause has been corrected and the motor can start safely.

See 9.2 Automatic restart rules by anomaly for delays and limits. An open circuit allows restart after 1 minute without counting towards the limit. A short circuit does not allow automatic restart. Phase loss requires its restart option to be enabled and uses the specific delays in that section.

When the allowed restarts are exhausted, operation is blocked. After correcting the cause, use the clear-errors command in the app or the OUT-OFF procedure described in the control panel chapter.

Clearing errors in the app, submitting current sensor settings, and activating then removing the pause clear the pending delay and reset the counter, as described in 9.2 Clearing the delay and restart counter. They may allow starting before the previous delay expires. Submitting current settings is reserved for qualified personnel.

Warnings and the counter are also cleared after the continuous anomaly-free operating period described in 9.2 Clearing after anomaly-free operation. None of these operations repairs the fault. If the anomaly recurs, stop further attempts and seek assistance.

12.3. General checking procedure

Start with the current state, LEDs, errors and notifications. Check history around the event and verify date and time, OUT-OFF, STOP-SW, sensors, timers or manual operations and current values.

Check the settings actually saved on the device and communication availability. Make one change at a time and verify the result. Electrical checks are reserved for qualified personnel and require the safety procedures in 2 Safety.

12.4. Restarting the device

Consider restarting only for a temporary failure not resolved by earlier checks. Record symptoms, confirm that no update or transfer is in progress and make the load safe, with OUT-OFF in the inhibited position.

Interrupt and restore power using the means provided in the installation. Wait for startup, establish communication and check the clock, settings and output state before enabling operation. Do not use repeated

power interruptions as a routine diagnostic method.

12.5. When to consider a factory reset

Resetting may be needed to recover access or settings that cannot be restored by normal methods. Do not use it as the first response to power failures, incorrect connections, motor, sensor or contactor anomalies, or insufficient communication coverage.

See 10.8 Factory reset and A Device reset and recovery. Record the information needed for new pairing and configuration. Battery replacement is a separate procedure described in B Replacing the internal battery.

12.6. When to stop using the equipment

Stop use under the conditions in 2.15 Abnormal operation and emergencies, if the motor runs without a run command or behaviour cannot be controlled safely. Keep the installation safe and request qualified personnel. Do not repeat resets or attempt internal repairs.

12.7. Contacting technical support

If the problem persists, contact technical support through official W4A channels. Provide the model, serial number, hardware, firmware and app versions, phone operating system, event description and time, observed states and LEDs and checks performed. Include useful logs or screenshots.

Do not send network passwords, access files or sharing QR codes.

13. Regulatory compliance

13.1. CE marking

W4A MProtect regulatory compliance is documented in the product's EU Declaration of Conformity. CE marking refers to the requirements of applicable European Union legislation identified in that declaration.

CE marking does not remove the need to follow this manual's installation, operating and safety instructions. The installer must check equipment suitability for the supply, motor and other connected loads, and installation site conditions.

13.2. EU Declaration of Conformity

The complete W4A MProtect EU Declaration of Conformity is available at:

www.w4a.pt/products/w4amprotect/legal/ce

The declaration identifies the manufacturer, product covered, applicable legislation, standards or technical specifications used and the person responsible for signing it.

Consult the version applicable to the installed equipment. For a copy or clarification, contact W4A through official channels.

13.3. Restriction of hazardous substances

Requirements restricting certain hazardous substances in electrical and electronic equipment applicable to W4A MProtect are identified in the EU Declaration of Conformity and product regulatory documentation.

13.4. Equipment modifications

Use only accessories, components and firmware versions authorised by W4A. Observe equipment specifications and instructions for power supply, outputs and sensor inputs.

WARNING — Unauthorised modifications

Do not modify W4A MProtect hardware, firmware, enclosure, internal connections or components without W4A authorisation. Such modifications may compromise safety, operation, compliance and warranty conditions, or make the equipment unsuitable for its intended use.
Do not change protection conditions to connect incompatible loads or permit operation outside specifications. All work must follow W4A instructions and be carried out by authorised personnel.

14. Disposal and end of life

14.1. Equipment disposal

W4A MProtect and its electrical and electronic components must not be disposed of with household or unsorted commercial waste.

At the end of its service life, send the equipment to an appropriate waste electrical and electronic equipment collection and treatment system.

Separate collection helps to:

- prevent negative environmental impacts;
- reduce risks to human health;
- allow material recovery;
- promote resource reuse and recycling.

Before removing W4A MProtect from the installation, prepare for interruption of operation and ensure that the motor and other connected equipment are left safe. Removal and electrical disconnection must be performed by qualified personnel.

DANGER — Equipment removal

Before disconnecting conductors or removing the equipment from the enclosure, switch off and isolate all supplies, prevent accidental reconnection and verify the absence of voltage.
Do not leave accessible conductors or terminals in an unsafe condition after removal.

14.2. Private users

For information on collection locations and procedures, contact:

- the retailer from whom the product was purchased;
- municipal services;
- an authorised electrical and electronic waste collector;
- another competent body in the country of use.

Hand over the equipment according to the collection body’s instructions. Do not abandon it or place it in unsorted waste containers.

14.3. Professional users

Professional users should contact the supplier or an authorised body to confirm applicable W4A MProtect collection and treatment conditions.

Do not dispose of the equipment with unsorted commercial waste. Record decommissioning and retain

the handover and treatment documentation required for the installation.

14.4. Internal battery

See B Replacing the internal battery for replacement and return to use.

Authorised personnel must remove the internal battery with the equipment switched off and isolated, and send it to a suitable waste battery collection and treatment system.

Do not dispose of the battery:

- in household or unsorted waste;
- in fire or by incineration;
- together with the equipment without following collection body instructions.

Do not open W4A MProtect solely to remove the battery unless authorised to work on the equipment. Ask technical support or the treatment body to perform this operation.

> **CAUTION — Damaged battery**
>
> A deformed, damaged or leaking battery must be handled by competent personnel and sent to an authorised body. Avoid contact with released materials and do not puncture, crush or short-circuit the battery.

14.5. Data deletion

Before transferring, returning, recycling or disposing of W4A MProtect:

1. record settings and historical data you wish to keep;
2. confirm that interruption of operation is appropriate for the installation;
3. execute **Restore factory data**, as described in chapter 10 Device management and information;
4. confirm by pressing the device button, following app instructions;
5. once complete, remove device access from the app where applicable.

> **WARNING — Data loss and interrupted operation**
>
> A factory reset deletes all W4A MProtect data and settings and requires new pairing and configuration before use resumes. Deletion is irreversible. Prepare any records you wish to keep beforehand.

Deleting history alone does not replace a factory reset. Likewise, removing the device from the app does not delete data saved on the equipment.

If you cannot complete the reset, contact technical support before handing the device to third parties. Do not assume data has been deleted merely because power has been disconnected.

15. Warranty, responsibility and support

15.1. User and installer responsibilities

W4A MProtect must be installed, configured, used and maintained according to this manual, technical characteristics, connected equipment instructions and applicable legislation and regulations.

The installer is responsible for checking product suitability for the installation, loads and operating environment, correctly making connections and checking required external protective devices.

The user is responsible for using W4A MProtect only for its intended purpose and observing this manual's warnings and limitations. The user must also check that configured sensors, current limits, timers and pauses are suitable for the installation.

Retain installation documentation and record significant changes to settings and connected equipment.

15.2. Improper use

W4A cannot guarantee correct or safe operation in the event of incorrect installation, use outside specifications, unauthorised connections or repairs, hardware or firmware modifications, missing protective devices, incompatible components, failure to follow this manual or damage caused by external conditions.

This provision does not limit any rights or liabilities that cannot be excluded under applicable legislation.

15.3. Limitations of displayed data

Current values, estimated consumption and costs, states, forecasts, history and notifications shown by W4A MProtect are intended for monitoring and operational support.

This information does not replace:

- suitable or certified measuring instruments where required;
- safety devices and external electrical protective devices;
- checking motor, contactor and controlled load operation;
- inspections by qualified personnel.

See the interpretation limits for states in chapter 11 Functional checks and troubleshooting through the app and records in chapter 11.12 Checking history. Before making an operating decision, confirm communication and the current installation state.

15.4. Warranty

The buyer's statutory rights regarding lack of conformity are determined by applicable legislation in the country of purchase. This manual does not limit those rights.

To report a problem, contact the seller from whom the product was purchased and provide proof of purchase, serial number and a description of the fault. Follow the instructions received before shipping or

dismantling the equipment.

If an additional commercial warranty is offered, its terms are provided by the guarantor. A commercial warranty supplements and does not replace the buyer’s statutory rights.

15.5. Technical support

If support is needed, first consult chapter 12 Troubleshooting.

If the problem persists, contact W4A technical support through the official channels at www.w4a.pt. Where possible, provide the information listed in that chapter’s technical support contact section.

Do not send network passwords, access files or sharing QR codes. Before removing or shipping equipment for assessment, follow technical support instructions and ensure the installation is left safe.

A. Device reset and recovery

A.1. Scope and choosing the procedure

This appendix describes W4A MProtect factory reset and firmware recovery. These procedures have different purposes and must be chosen according to the problem to be resolved.

- **Factory reset:** deletes data and settings saved on the device, allowing pairing and configuration to be repeated. It may be required when equipment access is lost or technical support recommends starting with a new configuration.
- **Firmware recovery:** restores the device's internal software. It is intended for equipment that does not start correctly or has a failure not resolved by normal procedures. Perform only when instructed by W4A technical support.

Resetting through the app, panel or battery removal are methods of accessing factory reset. They are not firmware recovery operations.

Procedures involving equipment opening, battery access or work on the supply are reserved for authorised technical support or qualified personnel expressly authorised by W4A. Internal battery replacement is described in appendix B Replacing the internal battery.

Do not use reset or recovery as the first response to installation, supply, motor, contactor, sensor or communication problems. First consult chapter 12 Troubleshooting.

A.2. Safety warnings

DANGER — Risk of electric shock

Before opening equipment or working on connections, switch off and isolate all supplies, prevent accidental reconnection and verify the absence of voltage. Wait for internal circuits to discharge before accessing them.

WARNING — Output operation

Make the motor, pump and other connected equipment safe before interrupting or restoring power. Set OUT-OFF to the inhibited position and ensure connected equipment cannot operate during the work.

CAUTION — Irreversible data loss

A factory reset deletes all device data and settings, including pairings and access, identification, communication settings, sensor settings, current limits and times, timers, automatic analyses and history. Keep the load inhibited until reconfiguration is complete.
Record the information needed to reconfigure the installation beforehand. Firmware recovery may also require new pairing and configuration.

Use electrostatic discharge protection during internal work. Do not force connectors or holders, cause short circuits or place the circuit board on conductive surfaces.

Never insert or remove the battery while the device is powered. Before restoring power, close the equipment correctly and ensure no live parts or components are accessible.

A.3. Preparation

Before starting:

1. record symptoms and LED indications;
2. check that the supply and connections are correct;
3. check for damage, moisture or overheating;
4. record settings needed after resetting;
5. make the installation safe and set OUT-OFF to the inhibited position;
6. ensure a stable supply throughout the procedure;
7. have a phone with the W4A MProtect app and the data needed for reconfiguration available.

If smoke, a burning smell, deformation or internal damage is present, keep the equipment disconnected and send it for technical assessment.

A.4. Factory reset

A factory reset allows the device to be paired and configured again. This is not firmware recovery.

Resetting through the app

Use this method while you still have device access. In **Information**, select **Restore factory data** and confirm by pressing the equipment's **Connection** button, as described in chapter 10 Device management and information.

Wait for completion without interrupting power. After resetting, repeat pairing and configuration before using the load again.

Resetting through the panel

Use this method when the device cannot be accessed through the app.

1. switch off and isolate the device supply;
2. set **OUT-OFF** to the inhibited position;
3. press and hold **Connection**;
4. restore power while holding the button;
5. wait approximately **5 seconds**, until **Error** lights up;

6. release the button to confirm the reset.

> **NOTE**
>
> To cancel at this stage, hold the button for approximately another 5 seconds, until Error goes off, then release it. Do not keep holding until the firmware recovery indication appears.

After confirmation, wait for **Connection** to light up, indicating that resetting has started. Do not disconnect power; wait for normal LED indication to return.

If the procedure does not complete, do not repeat it successively. Contact W4A technical support.

Resetting by removing the battery

This procedure restores access to reset mode when the previous methods have not completed. Battery removal is a preparation step; resetting requires confirmation using Connection.

1. switch off and isolate all supplies, prevent reconnection and verify the absence of voltage;
2. set OUT-OFF to the inhibited position and ensure equipment connected to the outputs cannot operate;
3. open the equipment and record battery position and polarity;
4. carefully remove the battery without damaging its holder;
5. close the equipment correctly before restoring power;
6. restore power and confirm that the LEDs show factory reset mode: Error, OUT-ON and Connection flash alternately;
7. press Connection for approximately **5 seconds**;
8. release when the LEDs return to the expected indication and wait for the reset to finish;
9. switch off and isolate all supplies again and verify the absence of voltage;
10. open the equipment, reinstall the battery observing polarity and close correctly;
11. restore power and confirm normal startup;
12. perform the post-battery-installation checks described in appendix B Replacing the internal battery.

If the device does not enter reset mode or complete the process, disconnect power and contact technical support. Do not repeat the procedure successively.

A.5. Firmware recovery

Firmware recovery installs a recovery version or stable version provided by W4A. Perform this procedure only when instructed by technical support.

> **CAUTION — Do not interrupt recovery**
>
> After confirming recovery, do not disconnect power, press Connection or change OUT-OFF. An interruption may prevent normal startup and require technical support intervention.

Starting and confirming

1. make the installation safe and confirm that no configuration transfer is in progress;
2. disconnect power and set OUT-OFF to the inhibited position;
3. press and hold **Connection**;
4. restore power while holding the button;
5. after approximately **5 seconds**, **Error** lights up; keep holding;
6. Error may go off after approximately **10 seconds**; keep holding;
7. wait for **Connection** to light up, approximately **40 seconds** after the start;
8. release when Connection lights up to confirm recovery.

To cancel before confirmation, keep holding until Connection goes off, then release.

> **NOTE**
>
> When starting with Connection held, releasing it when Error lights up confirms a factory reset. To recover firmware, keep holding until Connection lights up, approximately 40 seconds after the start.

Completion

After confirmation:

1. wait for Error to indicate recovery has started;
2. maintain a stable supply and do not use device controls;
3. wait for normal LED indication to return;
4. wait for the restart to finish completely before attempting app communication.

If power is interrupted during recovery or equipment does not return to normal mode, keep the load safe, record the observed indication and contact technical support. Do not immediately repeat the procedure.

A.6. Checks after reset or recovery

Keep OUT-OFF in the inhibited position until the required checks are complete:

1. confirm normal device startup;

2. repeat app pairing where needed, according to chapter 8 Device pairing;
3. check the displayed identification and firmware version;
4. check date and time and confirm there is no clock error;
5. reconfigure communication, sensors, current limits, timers and automatic analyses;
6. review measurement mode and current sensor connections according to 5.12 Installing current sensors;
7. check sensor states and the absence of errors preventing operation;
8. perform a controlled load test under safe installation conditions before resuming normal operation.

> **WARNING — Resuming operation**
>
> When the OUT-OFF interlock is removed, timers, sensors or other active commands may start the motor immediately. Check schedules, pause states and installation conditions before removing the interlock.

A.7. Stopping the procedure and technical support

Stop work and contact technical support if there is:

- smoke, a burning smell or abnormal heating;
- deformation, water ingress or moisture;
- damage to the battery, holder or circuit board;
- repeated restarts or failure to complete startup;
- unexpected indications or repeated failure after recovery.

Do not continue powering equipment showing damage. When contacting technical support, state the procedure performed, the stage at which failure occurred and observed indications, according to chapter 15 Warranty, responsibility and support.

B. Replacing the internal battery

B.1. Scope

The internal battery maintains the clock when device power is interrupted. The app's **Battery** indication signals a low battery. A low, missing or discharged battery may compromise date and time retention after power failure. Timers may be suspended when the time is invalid.

Battery replacement requires opening the equipment and must only be performed by authorised technical support or qualified personnel expressly authorised by W4A.

Use only the battery type specified by W4A for the equipment. If the correct reference cannot be confirmed, contact technical support before replacement.

B.2. Safety warnings

DANGER — Risk of electric shock

Before opening the equipment, switch off and isolate all supplies, prevent accidental reconnection and verify the absence of voltage. Wait for internal circuits to discharge.
Never insert or remove the battery while the device is powered.

CAUTION — Battery and internal components

Do not short-circuit battery terminals, reverse polarity or use a deformed, damaged or leaking battery.
Do not attempt to recharge a non-rechargeable battery.
Use electrostatic discharge protection and do not force the battery holder, connectors or circuit board.

B.3. Preparation and replacement

1. make the motor, pump and other connected equipment safe;
2. set OUT-OFF to the inhibited position;
3. switch off and isolate all supplies, prevent reconnection and verify the absence of voltage;
4. open the equipment and locate the internal battery;
5. record the position, polarity and reference of the installed battery;
6. carefully remove the battery without damaging its holder;
7. check that the holder is intact and inspect for leakage or corrosion;
8. fit a new battery of the type specified by W4A, observing polarity;
9. check that the battery is correctly seated and no tools or objects remain inside;
10. close the equipment correctly before restoring power.

If there is internal damage, corrosion or leakage, suspend replacement and send the equipment to technical support.

> **NOTE**
>
> Battery replacement is not a factory reset procedure. Do not power the equipment without its battery during this work: this may place the device in the reset mode described in appendix A Device reset and recovery.

B.4. Checks and return to use

After replacement, keep OUT-OFF in the inhibited position and perform the following checks:

1. restore power and confirm normal startup;
2. establish app communication;
3. check date and time and synchronise where needed;
4. confirm the low-battery indication has cleared;
5. check clock-dependent timers and analyses;
6. confirm the installation can operate safely before removing the OUT-OFF interlock.

> **WARNING — Resuming operation**
>
> When the OUT-OFF interlock is removed, the motor may start according to sensors, timers and current conditions. Check time, schedules and installation safety before resuming use.

If the low-battery indication or clock error persists, keep the installation safe and contact technical support.

B.5. Disposing of the used battery

Take the used battery to a suitable collection point. Do not put it in household waste or dispose of it by burning. Prevent terminal contact with metal objects during storage and transport.

Also see chapter 14 Disposal and end of life.