

Data logger controller



IPex30G

Installation and Connection Manual

Manual

Change Log Document



Revision	Date	Rationale for the amendment
1	11/06/2025	Initial issuance of the document
2	17/08/2026	Content evaluation

Content



01	Introduction	02	Installation and Wiring Precautions	03	Team Overview	04	General wiring schematic
	Page 5		Page 6		Page 7		Page 8
05	Installation and Connections	06	Pre-operational checks prior to activating the equipment	07	References		
	Page 9		Page 15		Page 16		

Figures

01 General diagram

Page 8

02 Power supply connection

Page 9

03 Valve connections

Page 10

04 Meter connections

Page 11

05 Integration of voltage-output sensors

Page 12

06 Connecting a sensor with a two-wire current output

Page 13

07 Connecting an SDI-12 sensor

Page 14

08 Connecting an IPex30E

Page 14

1. Introduction

This manual outlines the procedures necessary for the installation, wiring, and commissioning of an IPex30G device.

Prior to commencing the installation, review all safety instructions and ensure that you possess the necessary materials, tools, and power supplies.

2. Precautions for Installation and Wiring

The inputs and outputs of the IPex30G are equipped with safeguards against specific connection or configuration errors.

However, the interior of the equipment houses delicate electronic components that may be compromised by improper connections, moisture, or electrostatic discharge.

Before operating the equipment, adhere to the following instructions:

- ✓ Disconnect the power source prior to opening or handling the equipment.
- ✓ Do not detach the electronics from their enclosure.
- ✓ Refrain from directly contacting electronic components or internal circuit boards.
- ✓ Ensure that all cables are securely connected to their respective terminals prior to powering on the equipment.
- ✓ Verify that the cables are properly inserted and secured within the terminals.
- ✓ Ensure that all cable glands are securely closed and tightened.
- ✓ Ensure that the enclosure lid is fully closed.

2.1. Installation Guidelines

The equipment achieves an IP67 protection rating when the enclosure, cover, and cable glands are securely closed.

To enhance water protection:

Install the equipment in an upright position.
Refrain from positioning it in locations where it may become submerged.
Whenever feasible, orient the cable glands downwards.
Verify that there are no exposed cable entries.
Utilize appropriate plugs for any unused cable glands.

The IP67 protection rating cannot be assured if the cover, cable glands, or any other sealing components are not correctly installed.

3. Overview of the Equipment

The **IPex30G is an irrigation controller** capable of managing up to 30 24VAC valves. The number of valves can be increased to 60 with the use of an **expansion controller (IPex30E)**.

In addition to the irrigation programmer, the equipment facilitates the connection of up to four analog inputs (via voltage or current), SDI-12 sensors, and up to four pulse counters.

The valves can be operated in three distinct ways: automatically through sequential irrigation programs, remotely via a platform, or locally using three-position switches (auto, off, and on).

Valve control modes

The valves may be activated through three methods:

Automatic mode

The valves are regulated by the irrigation programs set up within the system.

Remote manual operation

The valves are controlled from the management platform, either activated or deactivated.

Local manual operation

Each valve can be operated via its three-position switch:

AUTO: the valve functions in accordance with the programming or remote commands.

OFF: the valve is deactivated.

ON: the valve is engaged manually.

Note: Prior to departing from the installation while it is operational, ensure that all switches are positioned correctly.

Culinary practices and consumption

IPex30G is engineered to function with a transformer of:

Output voltage: 24 volts alternating current.

Nominal current: 5 A.

This power supply accommodates the equipment's consumption and enables the simultaneous control of up to 15 valves, based on an estimated average consumption of 250 mA per valve.

The maximum number of active valves and the current limit can be adjusted through the communication system.

- The default configurations are:
A maximum of 15 valves may be active simultaneously.
- Current limit of 4,500 mA.

Note: These limits should be adjusted according to the actual usage of the installed valves.

4. Comprehensive connection diagram

Figure 1 illustrates the distribution of the connections and control elements of the IPex30G. Each zone is designated by a number to aid in its identification during installation.

Local regulation of the valves

Each valve is equipped with a three-position switch:

AUTO: the valve functions in accordance with the programming or remote commands.

OFF: the valve is in a closed position.

ON: the valve is engaged manually.

2. LED Indicators

The LED indicators enable a visual assessment of the equipment's status, active programs, and any alarms.

- **Green LED:** Signifies that a program is currently in operation.
- **Solid red LED:** Signifies that the limit of active outputs or the maximum current consumption has been surpassed.
- **Flashing red LED:** Signifies that the program is secured.

3. Program push buttons

It enables the activation of the associated programs.

In the case of the controller, pressing both buttons simultaneously for over 5 seconds locks the program for one week. If the timer is already locked, the same action will unlock it.

4. Valve discharge points

Terminals designated from V01 to V30 are utilized for connecting 24 VAC valves.

Each valve must be interconnected.

- To its corresponding output, for instance, V01.
- To one of the designated terminals referred to as COM.

The initial four blocks comprise six valve outlets and two shared terminals.

5. 24 VAC power supply input

In the fifth block, the final two positions are designated for powering the equipment and are labeled as INPUT 24 VAC.

Connect the output of the 24 VAC transformer to the designated terminals.

6. Puerto SDI-12

It enables the connection of probes that are compatible with the SDI-12 protocol through the power, data, and ground terminals.

7. Expansion Bus

It enables the controller to interface with a IPex30E unit via the BUS+ and BUS- terminals.

8. Analog Inputs

They enable the connection of up to four sensors with voltage or current output.

9. Meter Inputs

They enable the connection of up to four counters with pulse output.

Note: Prior to establishing any connections, ensure that the equipment is disconnected from the power supply and identify in the diagram the number corresponding to the element you intend to wire.

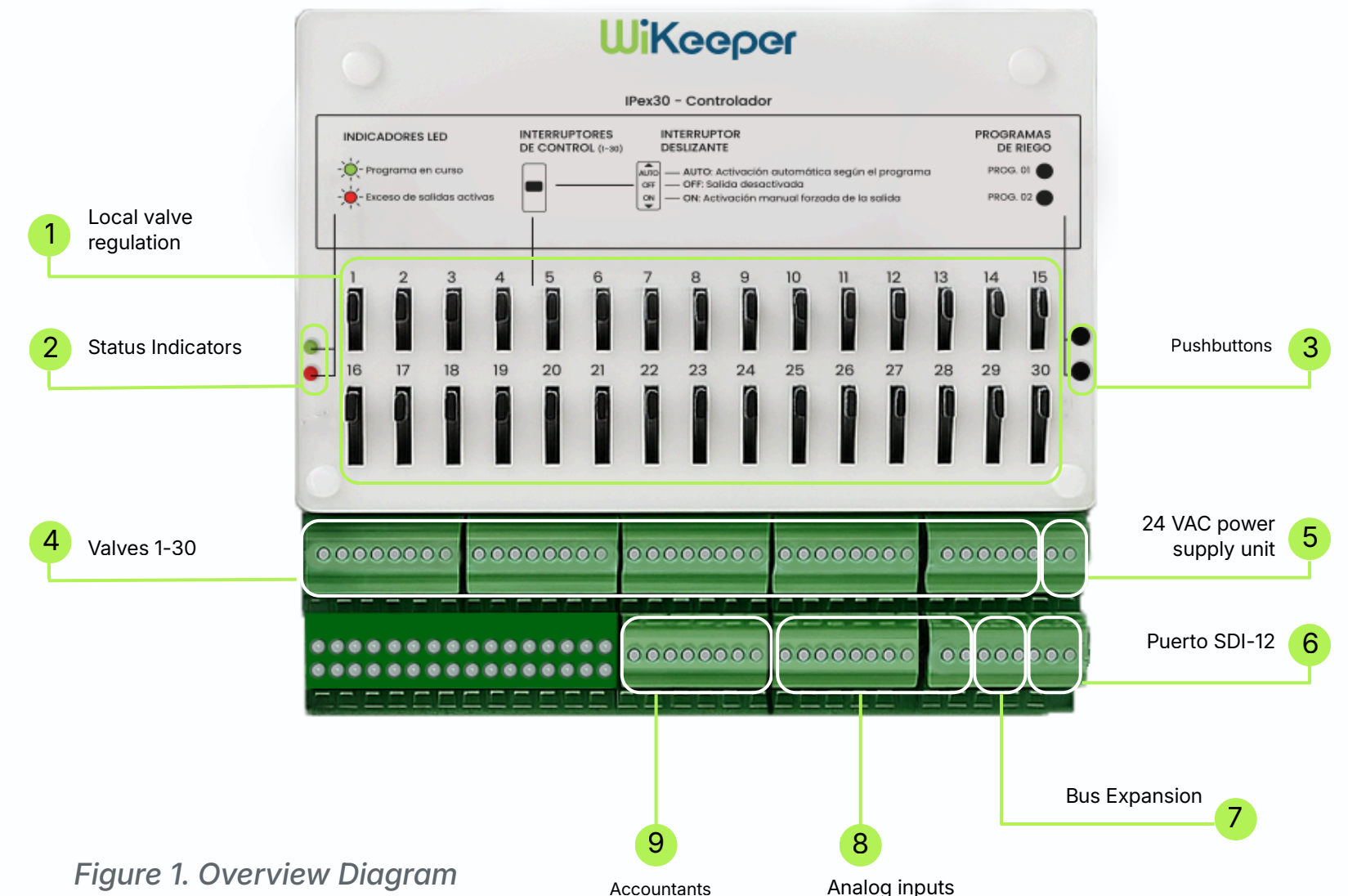


Figure 1. Overview Diagram

5. Installation and Connections

Before establishing any connection:

1. Disconnect the transformer from the power grid.
2. Ensure that the transformer complies with the specified requirements.
3. Identify the relevant connection terminals.
4. Examine the wiring diagram for the sensor, valve, or device designated for installation.
5. Connect all cables to the equipment that is not powered.
6. Inspect the wiring prior to activating the system.

5.1. Connection of power transformers

IPex30G necessitates a **24 VAC and 5 A power supply**.

The transformer output should be connected to the terminals designated as: INPUT 24 VAC. These terminals are situated on the fifth terminal block in the top row.

Installations utilizing IPex30E

When the installation incorporates an IPex30E unit, each piece of equipment is required to have its own 24 VAC transformer.

Therefore:

- The controller must possess its own transformer.
- The expansion requires an additional independent transformer.

This guarantees the power supply to both pieces of equipment and the concurrent activation of the designated valves.

Phase connection of transformers

When the controller and the expansion share common terminals, both transformers must be connected while preserving the same correspondence between their output terminals.

An improper connection may result in:

- Communication breakdowns between the controller and the expansion.
- Erratic performance.
- Potential harm to the electronics.

Warning: This connection must be established by qualified personnel. Prior to sharing common terminals, ensure that the outputs of both transformers are compatible.

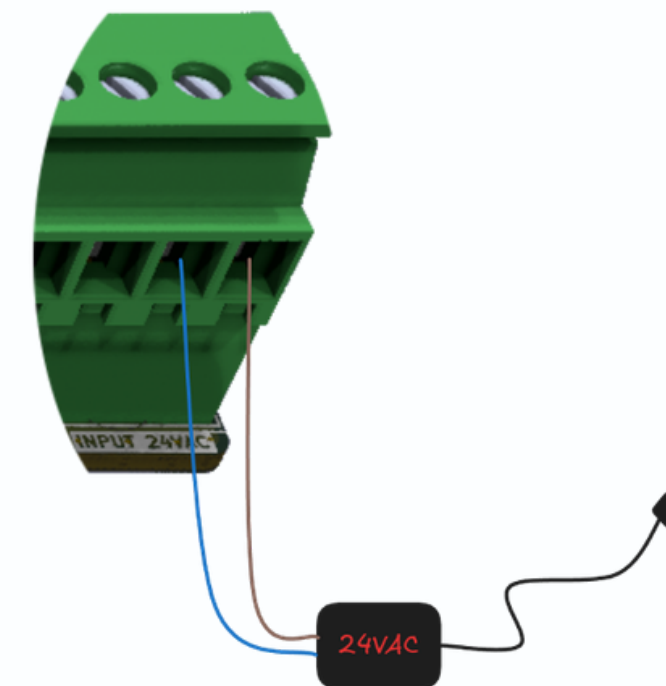


Figure 2. Connection of the power supply

5.2. Valve Coupling

The valves are linked in the upper row of terminals through the outputs designated from **V01 to V30**.

Each valve necessitates two connections:

- A cable linked to the appropriate output (V01-V30).
- The other cable is attached to one of the shared COM terminals.

Connecting a valve to outlet V01.

1. Connect one of the valve cables to terminal V01.
2. Connect the second cable to one of the available COM terminals.
3. Ensure that both connections are securely fastened.

Installations featuring multiple valves

When connecting multiple valves, allocate the common connections across the various available COM terminals.

Important: Avoid connecting all valves to a single COM terminal.

The allocation of connections among the various COM terminals facilitates:

- Distribute the current among the terminals.
- Prevent overheating of the terminals.
- Minimize the risk of damage to terminals.
- Enhance the reliability and safety of the installation.

Each output supports a maximum current of 500 mA. The device permits **the simultaneous activation of up to 15 outputs**, as long as the total current draw remains within the configured limit and does not exceed the transformer's capacity. **By default, the total limit is established at 4,500 mA.**

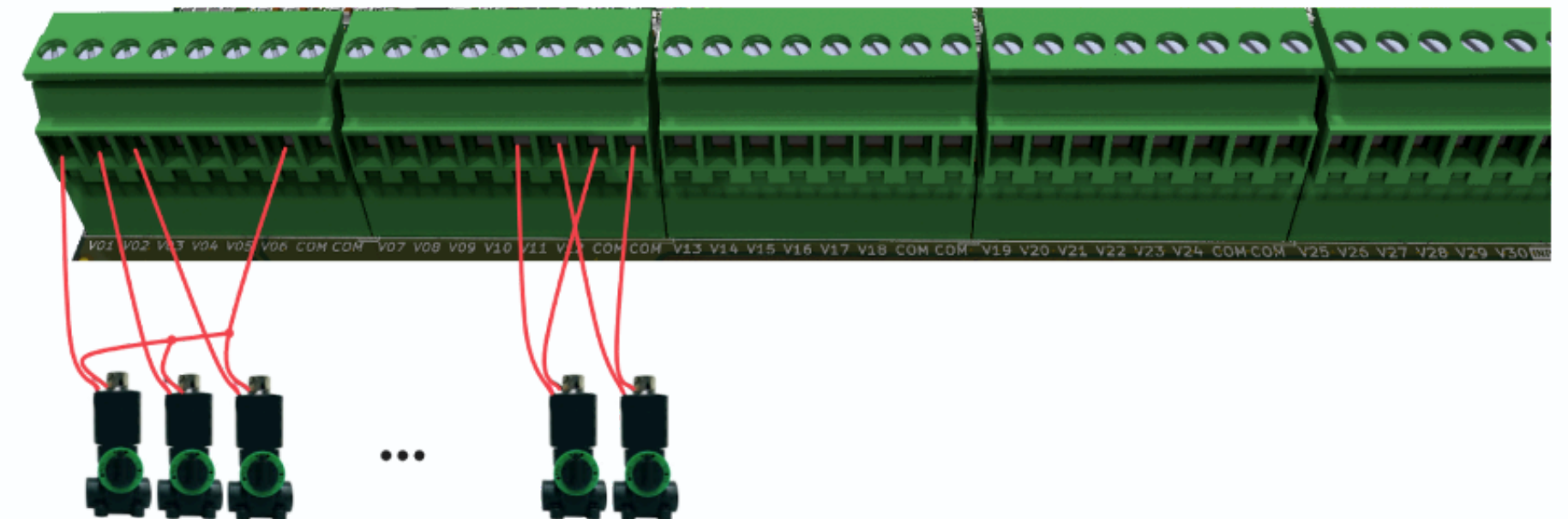


Figure 3. Connections of the valve.

5.3. Meter Connection

The counter inputs are positioned on the lower row of the equipment.

IPex30G facilitates pulse counting through a potential-free contact, analogous to an NPN type output.

To register a pulse, the counter must establish a connection between the two corresponding terminals.

Supported functionalities

- Maximum resistance of the closed contact: 2 k Ω .
- Maximum reading frequency: 10 Hz.

The counter inputs are designated as:

CNT3

CNT4

CNT5

CNT6

Connection procedures

1. Verify that the counter possesses a compatible output.
2. Identify the two pulse output cables.
3. Connect the cables to the appropriate meter input.
4. Verify that the meter does not introduce an external voltage to the input unless its documentation explicitly indicates that the output is compatible.
5. Validate the operation by producing multiple test pulses.

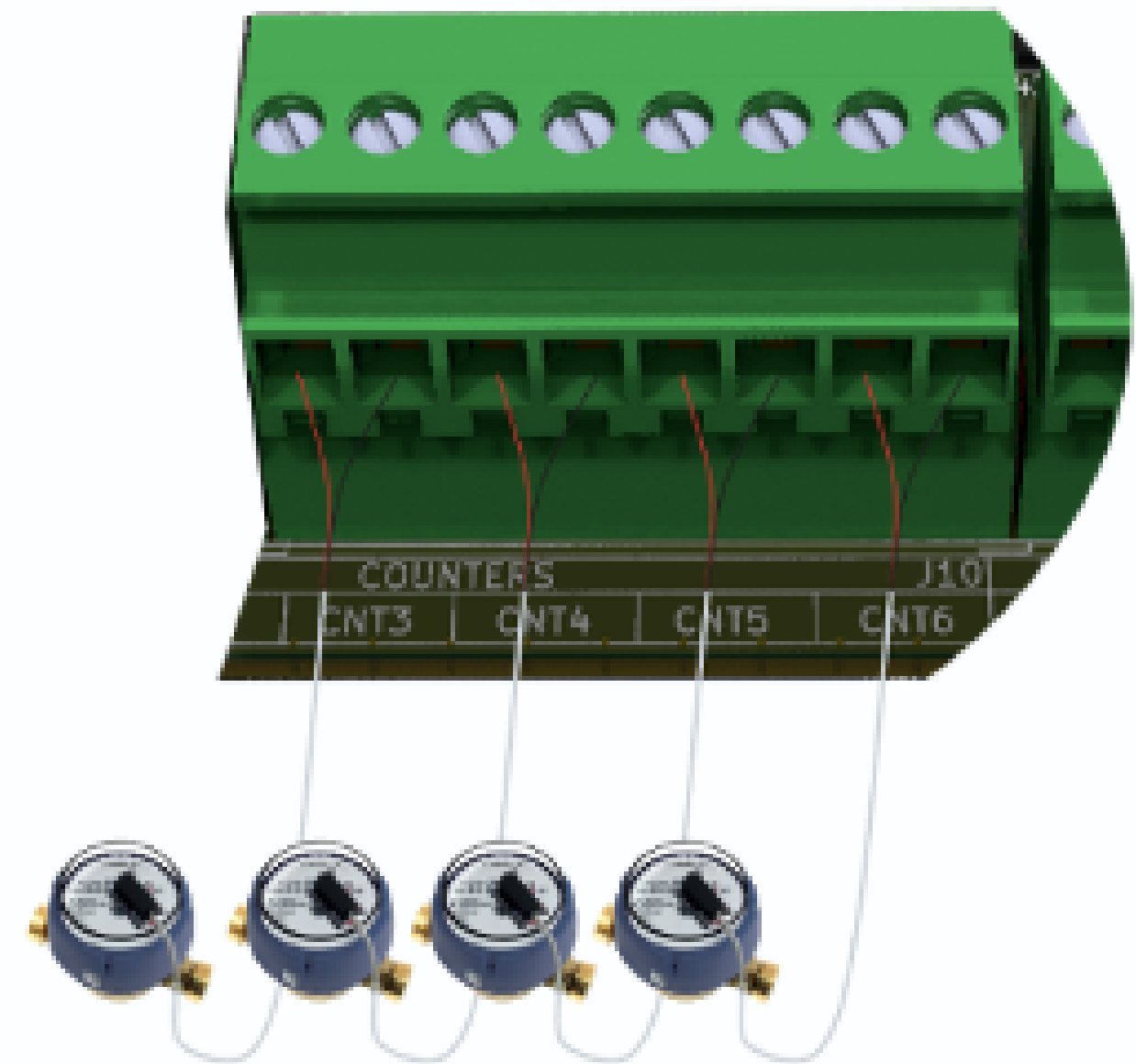


Figure 4. Wiring diagram for the meter

5.4. Connections for Analog Input

The IPex30G is equipped with **four analog inputs**. These inputs enable the connection of sensors to:

- Voltage output.
- Electrical outlet.

Each input is equipped with terminals for:

- Sensor power source.
- Mass or reference.
- Analog signal.

The power supply for each sensor can be adjusted within the range of 0 to 12 V. The power supply configuration is autonomous for each input. The maximum current that the equipment can provide to power the sensors is 500 mA.

The entries are designated by numbers ranging from 1 to 4.

5.5. Connection of analog sensors with voltage output

A sensor featuring a voltage output typically comprises three wires:

- Feeding.
- Ground or GND.
- Sign.

Electrical connection

Connect the power cable of the sensor to the VANx terminal. The letter x denotes the number of the utilized analog input.

For instance, to utilize analog input 1:

- Power Supply: VAN1
- Signal: AN1
- Ground: GND

External power source

The sensor may also be powered by an external source.

Then:

- Do not attach the power cable to the VANx terminal.
- Connect the signal to the ANx terminal.
- Ensure that the sensor and WiKeeper utilize a compatible ground reference.

Ground connection

Connect the ground wire of the sensor to one of the GND terminals.

Signal connectivity

Connect the signal cable to the appropriate ANx terminal.

The power supply and the signal must utilize the same input number.

Power supply

OUT1

Sign

AN1

Do not connect the power supply to one input while connecting the signal to a different one.

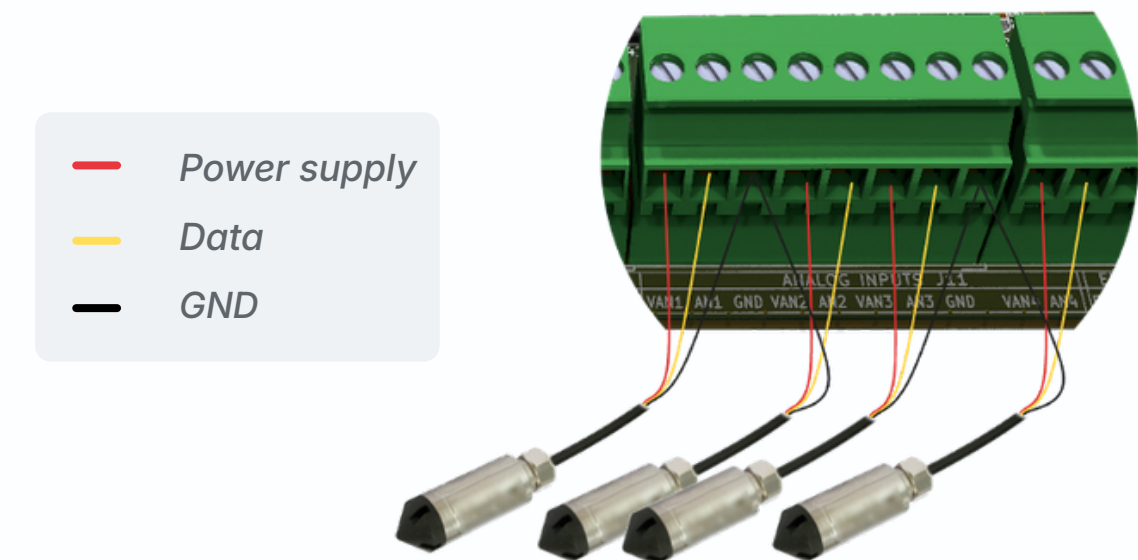


Figure 5. Integration of sensors with voltage output.

5.6. Integration of sensors with current output

Sensors with a current output may include:

- Two-wire.
- Three-wire.

The method of connection is contingent upon the type of sensor.

Important: Prior to wiring, refer to the manufacturer's documentation to accurately identify each conductor wire.

5.6.1. Dual-wire current sensors

A two-wire sensor employs a single circuit for both power reception and signal transmission.

Connection

1. Connect the power cable to the VANx terminal.
2. Connect the return or signal cable to the ANx terminal.

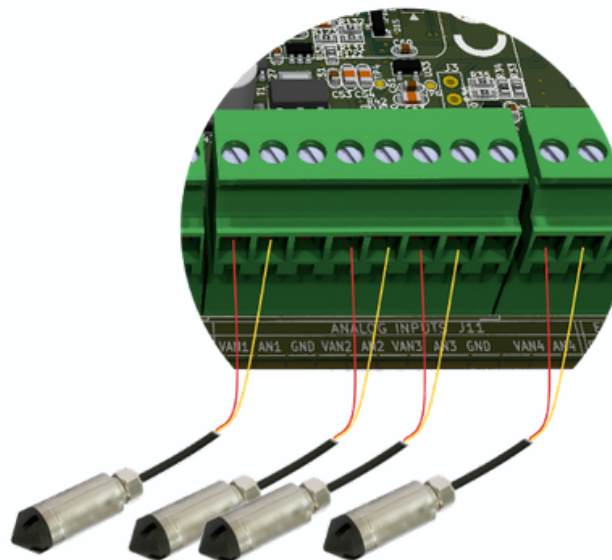
The letter x represents the number of the utilized analog input.

Example:

- Power Supply: VAN1
- Return or signal: AN1

A third ground wire is not required for this type of connection.

— Power Supply
— Data



5.6.2. Three-Wire Sensors

A three-wire current sensor generally comprises:

- Power Supply
- Time
- Sign

Connection

1. Connect the power cable to the VANx terminal.
2. Attach the ground wire to a GND terminal.
3. Connect the signal cable to the ANx terminal.

The sensor can also be powered by an external source.

In such a scenario, please confirm that:

- The supply voltage is appropriate for the sensor.
- The power output is compatible with the WiKeeper input specifications.
- The mass reference is accurate.
- The equipment operates within the permitted range.

Figure 6. Configuration of a sensor featuring a two-wire current output.

5.7. Establishing a connection with an SDI-12 probe

The IPex30G features a port that is compatible with the SDI-12 version 1.3 standard.

A maximum of 16 probes may be connected to this port.

The actual maximum amount may vary based on the power consumption of the probes, the length of the cable, and the specific characteristics of the installation.

Connection Terminals The SDI-12 probes utilize three connections:

- PWR: energy.
- SDI: information.
- GND: ground.

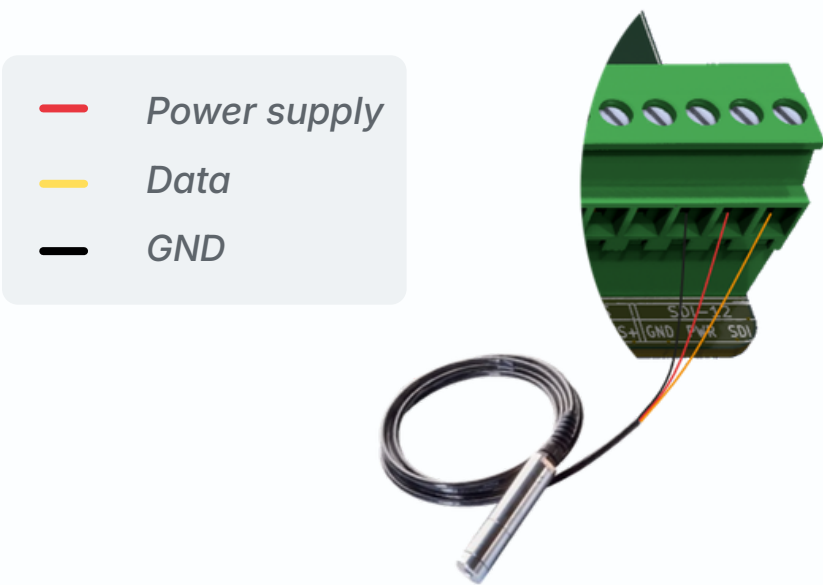


Figure 7. Integration of an SDI-12 probe

5.8. Establishing a connection with an IPex30E

The controller is compatible with an IPex30E device. The expansion enables you to incorporate:

- 30 valves.
- 4 counters.

With a connected expansion, the system is capable of managing a total of:

- 60 valves.
- 8 counters.

Only one expansion unit may be connected to each controller.

Expansion bus

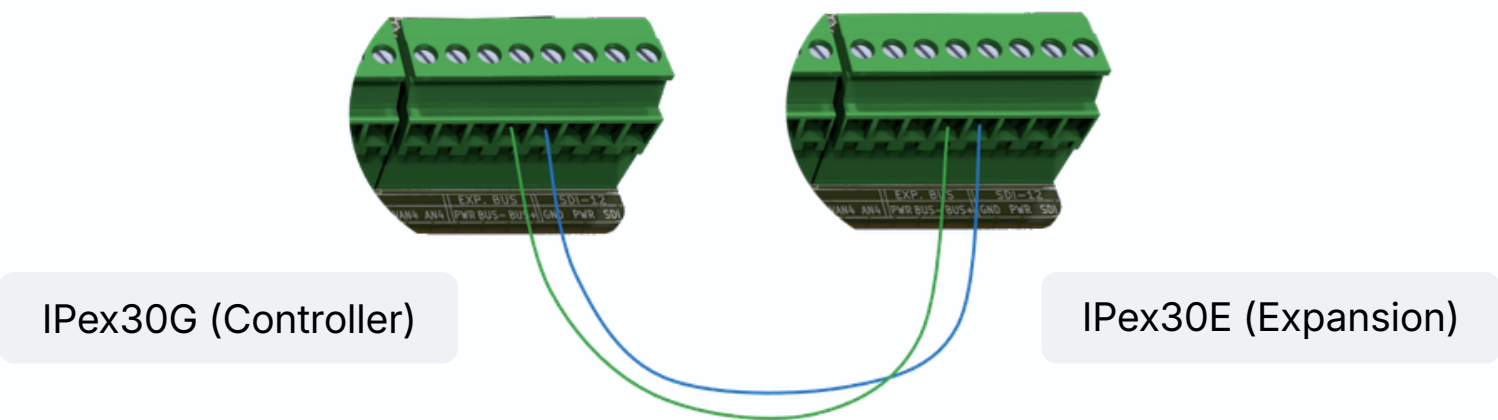
Communication between the controller and the expansion occurs via the connector designated as:

EXP. BUS

This bus operates between two terminals:

- BUS+
- BUS-

Note: For expansion bus cabling, it is advisable to utilize shielded twisted-pair cable to mitigate potential interference issues; however, if the distance is very short ($\leq 2m$), standard cable may be employed.



6. Verifications prior to activating the equipment

Before connecting the equipment to the electrical network, acquire the following items to guarantee a proper and safe installation.

Feeding

- Confirm that the power supply is 24 VAC and 5 A.
- Verify that the power cables are securely connected to the 24 VAC INPUT terminals.
- Ensure that there are no loose wires or copper strands exposed outside the terminals.

Valves

- Ensure that each valve is linked to the appropriate output and to a COM terminal.
- Ensure that common connections are allocated across the various COM terminals.
- Verify that the valve switches are positioned correctly.

Expansion module

- Verify that the expansion bus is connected with the correct polarity: BUS+ to BUS+ and BUS- to BUS-.
- Ensure that the controller and expansion unit are equipped with separate transformers.

Conclude the team.

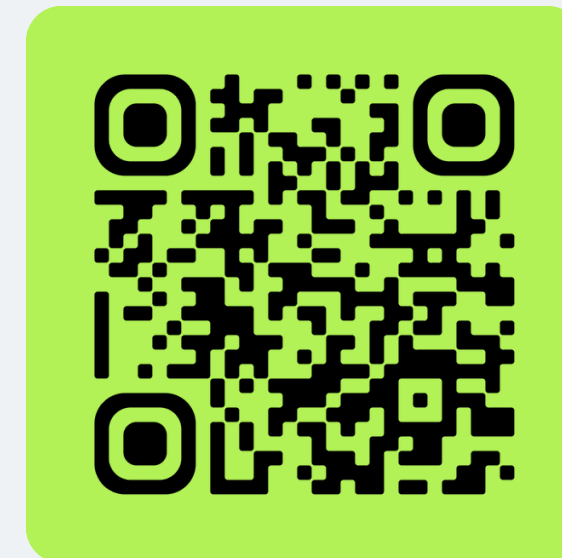
- Verify that all cable glands are securely closed.
- Ensure that the device cover is properly installed.

Upon completion of all checks, connect the power supply and confirm that the equipment's LED indicators display the anticipated status.

7. References

- [1] Odin Solutions, IPex30G – Technical Specifications
- [2] Odin Solutions, IPex30E – Technical Specifications

IPex30G Visual



↗ Access the Video Manual



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