



WOLF GATEWAY · LINUX EDGE CONTROLLER

Wolf-8ADio1Ro

8 Multifunction I/O · 1 Relay · RS-485 Modbus RTU

I/O	8 ports (DI/DO/AI/NTC/Wiegand) · 1 relay (5 A @ 30 V AC / 30 V DC)
FIELD BUS	RS-485 Modbus RTU
NETWORK	10/100 Ethernet · optional 4G/LTE
SOFTWARE	Wolf-OS platform · Wolf-App automation
POWER	11.5–30 V DC · 0.6 W @ 12 V
INSTALLATION	DIN-rail · –40 to +55 °C

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1 Introduction

The **FoxIoT Wolf-8ADio1Ro** is a Linux-based industrial edge controller in the Wolf Gateway family. It pairs the Wolf motherboard with an 8ADio1Ro expansion card that adds **eight software-configurable multifunction I/O ports, one Omron relay**, and an **RS-485 Modbus RTU** port. Each port works as a digital input, digital output, 0–10 V or 4–20 mA analog input, NTC temperature sensor, or Wiegand reader — so one card covers almost any sensor or signal type. The gateway forwards field data to your cloud, SCADA, or VPP platform — via MQTT, REST, or Modbus TCP over Ethernet or 4G/LTE.

The hardware runs **Wolf-OS** (the Linux platform) and **Wolf-App** (drop-in automation software). Expansion cards are detected automatically at boot, so the platform configures its drivers without manual setup.

1.1 Key features

- 8 × multifunction I/O ports — DI (dry contact or ≤ 30 V), DO (≤ 350 mA, protected low-side), AI 0–10 V, AI 4–20 mA (external resistor), NTC (10k), or Wiegand, per port. Software 10 k Ω @ 10 V input pull-up. 12-bit ADC.
- 1 × Omron relay (5 A @ 30 V AC / 30 V DC) — signal a BMS/PLC/SCADA input, drive a contactor coil, or trigger a door strike.
- RS-485 Modbus RTU field bus — MQTT / REST / Modbus TCP on the network side.
- 10/100 Ethernet, optional 4G/LTE (mini-PCIe modem + SIM).
- Runs Wolf-OS and Wolf-App, automatic expansion-card detection.
- DIN-rail, 11.5–30 V DC, –40 to +55 °C.

1.2 Typical applications

- **HVAC monitoring & control** — read temperature, humidity, and pressure sensors on the analog inputs, switch a unit via the relay, and run local logic when the cloud link is down.
- **Access control** — in a hostel, office, or apartment building, connect Wiegand card readers, PIN keypads, or combined reader-keypad units on the multifunction ports and release the door strike from the relay output. Log events upstream over MQTT or REST.
- **PV-park monitoring** — read irradiance sensors, module-temperature probes, and current transducers on the 4–20 mA and 0–10 V inputs, and poll the string inverters over RS-485 Modbus RTU. Report upstream over Ethernet or 4G/LTE.
- **Sensor-heavy automation** — mix digital, analog, NTC, and Wiegand signals on one controller and report over Ethernet or 4G/LTE.

About this manual. This manual covers the **hardware** of the Wolf-8ADio1Ro — installation, wiring, power, and the on-board I/O. Software (operating system, networking, automation, cloud) is documented separately: see the **Wolf-OS** and **Wolf-App** manuals listed below.

Related documents

Document	Link
Datasheet / product overview	foxiot.eu/products/wolf-gateway/wolf-8adio1ro
Wolf-OS (platform)	foxiot.eu/products/wolf-gateway/wolf-os
Wolf-App (automation)	foxiot.eu/products/wolf-gateway/wolf-app
First-time setup guide	foxiot.eu/wolf-setup
Firmware releases	foxiot.eu/firmware/wolf-gateway

2 Safety

Read and understand this manual before installation or maintenance. The following guidance protects personnel and equipment.

2.1 General safety guidelines

- Only qualified personnel should install, wire, or service the device.
- Use appropriate personal protective equipment when working with electrical components.
- Do not operate the device if it appears damaged or has been exposed to moisture.
- Ensure all wiring and connections comply with local regulations and standards.
- Keep the working area clean and free of conductive materials.

2.2 Electrical installation safety

Low-voltage device. The Wolf-8ADio1Ro is a low-voltage controller — the supply is 11.5–30 V DC, the I/O ports accept up to 30 V DC, and the relay is rated **5 A @ 30 V AC / 30 V DC (it is not intended to switch mains voltage)**. Power it from an isolated SELV supply and keep all field wiring within these limits.

- **DIN-rail mounting** — mount on a 35 mm DIN rail inside an electrical cabinet, secured so the unit cannot shift or fall.
- **Low-voltage wiring** — power the unit from an isolated (SELV) supply. Use appropriate low-voltage wire for power and I/O. Do not route low-voltage signal wiring alongside high-voltage cables.
- **Power supply** — use a SELV power supply with output overcurrent and short-circuit protection, for example the Mean Well HDR-30-24. If the unit is fed from a larger cabinet supply, protect its supply line with a fuse of max. 2 A.
- **Modbus data line** — use 120 Ω twisted-pair cable on the RS-485 lines. The card has a fixed on-board 120 Ω terminator, so the unit must sit at one physical end of the bus — terminate the far end with 120 Ω and leave mid-bus devices unterminated.
- **Relay wiring** — use properly rated wiring and protect the load circuit with an appropriate fuse. The 5 A rating is resistive — for inductive loads such as door strikes and contactor coils the limit is 2 A, and derate for capacitive loads (see [Specifications](#)).

2.3 Radio / LTE antenna safety

Applies only to units fitted with the optional 4G/LTE modem.

- **Distance from people** — install the LTE antenna so that it is at least **30 cm from people** during normal operation.
- **Antenna** — use a 50 Ω antenna with $VSWR \leq 2$ and a gain of **no more than 4 dBi in every band used**. Check the per-band gain in the antenna datasheet, not only the headline figure.
- **Other antennas** — customer-supplied antennas must meet the same requirements. With any other antenna, the installer is responsible for re-assessing RF exposure and radio compliance.
- **Never transmit without an antenna** — do not operate the modem without an antenna connected to A1.

2.4 Handling, storage & environment

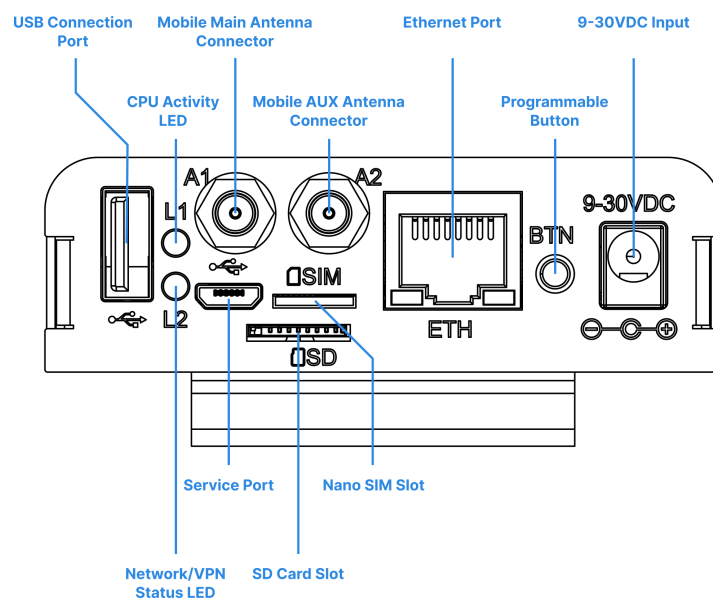
Handle with care to avoid mechanical shock. Store in the original packaging in a clean, dry place within the rated temperature range. The device is for indoor cabinet use. Outdoor installation is possible only inside a suitably rated weatherproof enclosure (IP65 or higher). Avoid excessive humidity/condensation, direct sunlight or radiant heat, and corrosive gases, dust, or vibration.

3 Specifications

3.1 Connectors and ports

The unit has two connection sides. The motherboard carries the network, power, and storage ports. The expansion card carries the field I/O — the eight multifunction ports, the relay, and the RS-485 port.

Network, power, and storage connect on the motherboard front:

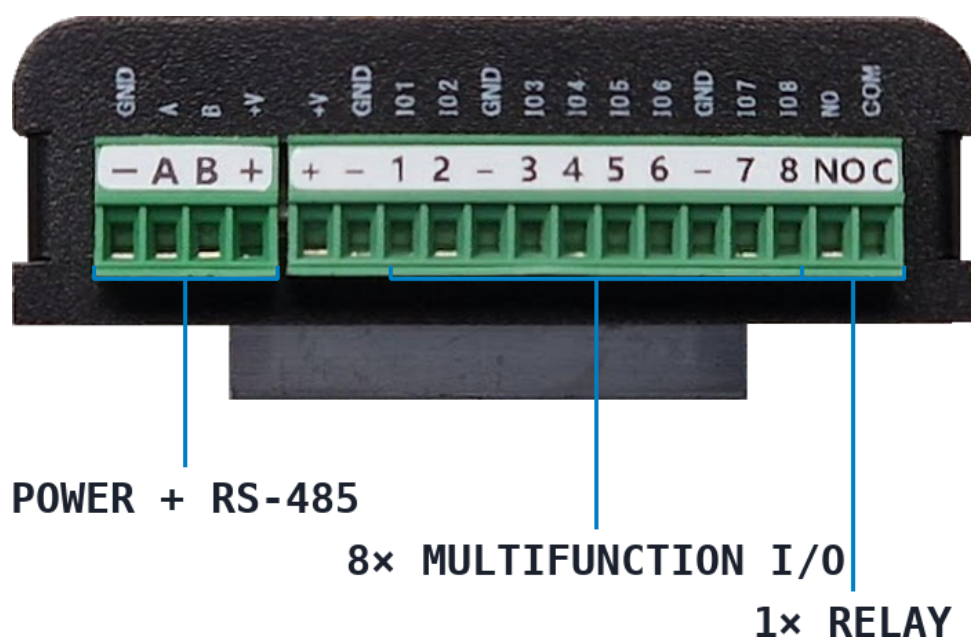


Wolf-8ADio1Ro front ports

Front Port	Function
USB	USB 2.0 host, software-switchable power, over-current protection
Service Port	Micro USB 2.0 — console and firmware upgrade
ETH	10/100 Mbps Ethernet (RJ45)
A1 / A2	4G/LTE antenna connectors — A1 main, A2 Rx-diversity (optional)
Nano SIM	SIM slot for the LTE modem
SD	Micro-SD card slot, software-switchable power
BTN	User-programmable button
L1 / L2	Programmable status LEDs — L1 heartbeat, L2 user
11.5–30 VDC	DC jack (2.1 / 5.5 mm) power input

Supply is 11.5–30 V DC, not 9–30 V. The DC-jack silkscreen reads "9–30 VDC" because the front panel is shared across the Wolf Gateway family — for this product, the 11.5–30 V DC range in this table is authoritative.

Field wiring connects on the expansion card:



Wolf-8ADio1Ro expansion-card connectors

Connector	Function
– A B +	Power (–, +) 11.5–30 V DC · RS-485 A (+) / B (–)
1 ... 8	8 multifunction I/O ports · DI / DO / AI 0–10 V / AI 4–20 mA / NTC / Wiegand
NO C	1 relay (normally-open + common) · 5 A @ 30 V AC / 30 V DC

RS-485 polarity. On this connector A is positive (non-inverting) and B is negative — the common industry convention. The RS-485 standard's A/B lettering is a well-known source of confusion (often cited as the opposite), so if a device won't communicate, try swapping A and B.

3.2 Motherboard

Parameter	Value
CPU	NUC980 ARM926EJ-S @ 300 MHz
Memory	128 MB DDR II
Storage	128 MB NAND Flash
Ethernet	10/100 Mbps RJ45
USB	Micro USB 2.0 (FW upgrade) + USB 2.0 host (software-switchable power, over-current protection, 1 A)
SD Card	Micro-SD slot with detection, software-switchable power
SIM	Nano SIM (for LTE modem)
Mini PCIe	USB 2.0 + GPIOs, software-switchable power (4G/LTE/NB-IoT/WiFi modules)
Crypto	Hardware acceleration — AES-256, RSA-2048, SHA-512, ECC-256, HMAC, RNG (Linux software is not limited to these)
RTC	Real-time clock (battery backup optional)
Sensors	Onboard PCB temperature, input voltage monitoring
Status LEDs	2× programmable (heartbeat + user by default)

3.3 Expansion card (8ADio1Ro)

Parameter	Value
Multifunction ports	8 × software-configurable per port: digital input, digital output, analog input 0–10 V, analog input 4–20 mA, NTC temperature, or Wiegand reader
Input pull-up	10 kΩ to an internal 10 V source, per input, software-enabled — on for dry contacts, auto-managed for NTC, off for analog inputs
Digital input	Dry contact / open-collector (via the pull-up) or live signal ≤30 V DC
Digital output	Protected low-side switch, ≤350 mA — short-circuit, over-current, and over-temperature protection (latches off on fault), internal inductive clamp
4–20 mA input	Read via an external burden resistor to "—" (250 Ω → 1–5 V · 500 Ω → 2–10 V)
NTC input	10k NTC recommended (matches the pull-up), direct connection, curve set in software
Wiegand	Up to 4 readers, each on a consecutive input pair (ports 1/2, 3/4, 5/6, 7/8) — lower-numbered port D0, higher D1. Reads 26-bit and 34-bit cards and 4-bit and 8-bit keypad frames, detected automatically.
ADC resolution	12-bit
Relay output	1 × Omron (SPST-NO), 5 A @ 30 V AC / 30 V DC resistive, 2 A inductive (door strikes, contactor coils), >100,000 operations
RS-485	±15 kV HBM ESD, ±30 V bus protection (on-board TVS), 120 Ω termination (built-in, fixed), on-board fail-safe bias
Card detection	On-board EEPROM (auto-detected by the platform at boot)

3.4 Communication & network

Parameter	Value
Field bus	RS-485 Modbus RTU, 300–115200 bps (standard rates)
Ethernet	10/100 Mbps RJ45
Cellular	Optional 4G/LTE — Quectel EC25-EUX (mini-PCIe) + nano-SIM
LTE / WCDMA / GSM bands	LTE-FDD B1/B3/B7/B8/B20/B28A · LTE-TDD B38/B40/B41 · WCDMA B1/B8 · GSM/EDGE 900/1800 MHz
Max. transmit power	23 dBm (LTE) · 24 dBm (WCDMA) · 33 dBm (GSM 900) · 30 dBm (GSM 1800)
Antenna	2 × SMA (A1 main, A2 Rx-diversity), 50 Ω; antenna ≤ 4 dBi, ≥ 30 cm from people
Network protocols	MQTT, REST, Modbus TCP — client, server, and transparent RTU↔TCP gateway (Wolf-App)
Remote access	VPN — WireGuard (built-in) · OpenVPN (Wolf-OS package)

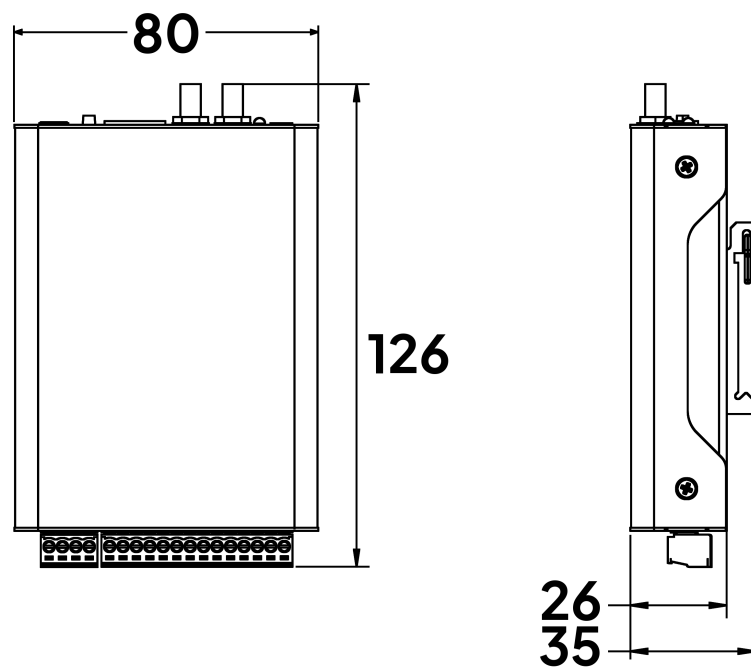
3.5 Power

Parameter	Value
Input range	11.5–30 V DC — DC jack (2.1 / 5.5 mm) or – / + terminals (one source only)
Average power	0.6 W @ 12 V DC
Reverse-voltage protection	Yes
External protection	SELV supply with overcurrent/short-circuit protection (e.g. Mean Well HDR-30-24); fuse ≤ 2 A when fed from a larger supply

Figures are for the base unit. The optional 4G/LTE modem draws additional power depending on network state and signal quality.

3.6 Mechanical & environmental

Parameter	Value
Mounting	DIN-rail
Dimensions	126 × 80 × 35 mm (depth 26 mm body, 35 mm including the DIN-rail clip)
Weight	~350 g
Operating temperature	–40 to +55 °C
Storage temperature	–40 to +75 °C
Humidity	5–90 % (non-condensing)



Wolf-8ADio1Ro mechanical dimensions (mm)

4 How It Works

4.1 Platform & expansion card

The Wolf motherboard runs Wolf-OS (the Linux platform) and Wolf-App (the ready automation software), while the 8ADio1Ro expansion card provides the field I/O. Wolf-OS identifies the card at boot via an on-board EEPROM and loads the right drivers automatically — no manual configuration of the I/O. Two programmable status LEDs (L1 heartbeat, L2 user) indicate operation.

4.2 Multifunction I/O & relay

Each of the eight ports is configured in software for its signal type — a digital input, a digital output, a 0–10 V or 4–20 mA analog input read by a 12-bit ADC, an NTC temperature sensor, or a Wiegand reader. Each input has a software-enabled 10 k Ω pull-up to a precise internal 10 V source. A **digital input** reads dry contacts, switches, and open-collector outputs by enabling the pull-up — no external voltage is needed — or a live signal up to 30 V DC. A **4–20 mA** input is read as the voltage across an external burden resistor fitted to "—" (250 Ω gives 1–5 V, 500 Ω gives 2–10 V), with the pull-up off. A **0–10 V** input is high-impedance with the pull-up off. In **NTC** mode a 10k thermistor connects directly to the input and "—" — the firmware pulses the pull-up on only during each reading, so the thermistor does not self-heat, and the curve is set in software. A **digital output** is a protected low-side switch (up to 350 mA) with short-circuit, over-current, and over-temperature protection that latches off on a fault, plus an internal clamp for inductive loads. Mixing types across the eight ports lets one card serve sensors, contacts, and readers at the same time. The single Omron relay (SPST-NO, 5 A @ 30 V AC / 30 V DC) sends a dry-contact signal to a BMS, PLC, or SCADA input, drives a contactor coil, or triggers a door strike from local logic.

4.3 Startup & power-loss behavior

The relay is non-latching (SPST-NO), so the contact is open whenever the controller is unpowered, booting, or rebooting. Relay state does not survive a reboot. Ports configured as digital outputs default to off at startup. Inputs are level-read at startup, so an already-active input reads as active. Inputs are not monitored during boot, so a pulse that arrives while the controller is starting is not captured.

4.4 Communication

The RS-485 port runs Modbus RTU to field devices — the primary field protocol. The same port also connects other RS-485 devices, and M-Bus meters through an M-Bus gateway. On the network side, Wolf-App forwards data over MQTT, REST, or Modbus TCP via Ethernet or an optional 4G/LTE modem.

The card carries a **fixed** on-board 120 Ω terminator, so the Wolf-8ADio1Ro must sit at one physical end of the RS-485 bus. Terminate the far end with 120 Ω and leave any mid-bus devices unterminated.

5 Installation

Read the [Safety](#) section before installing.

Disconnect all power before wiring. Double-check polarity and that every connection is secure before powering on.

1. **Unpack and inspect** the device for transport damage, and check the model and ratings.

2. **Mount** — first hook the top edge of the clip over the top of the 35 mm DIN rail, then press the unit down to compress the top spring and push the bottom in against the rail. The spring then presses the unit firmly against the rail.
3. **Configure the ports** — decide each port's role (DI, DO, analog, NTC, Wiegand) in **Wolf-App**, then wire the field devices, relay, and RS-485 to the pluggable terminals — see [Connectors and ports](#) under [Specifications](#).
4. **Network** — connect Ethernet, or fit the nano-SIM and connect the antenna to A1 for 4G/LTE. A second antenna on A2 (Rx-diversity) is recommended for better reception.

LTE antenna: at least 30 cm from people; 50 Ω , ≤ 4 dBi — see [Safety](#).

5. **Power** — apply 11.5–30 V DC, via the DC jack or the – / + terminals on the expansion card. Use only one source — do not connect both at the same time.
6. **Configure** — set up connectivity and automation in **Wolf-App**. See [Software & Configuration](#) and the [first-time setup guide](#).

Controller removal. To remove the unit, push it down to compress the top spring clip, then pull the bottom edge toward you and lift it off the rail — no tool needed.

6 Software & Configuration

The Wolf-8ADio1Ro has no display — apart from the programmable button, all setup and operation happen in software, including each port's signal-type assignment. This hardware manual does not duplicate the software documentation. For networking, secure updates, automation, and cloud connectivity, use the dedicated manuals:

- **Wolf-OS** — the Linux platform: networking, secure updates, system services. See foxiot.eu/products/wolf-gateway/wolf-os.
- **Wolf-App** — drop-in automation: cloud/VPP connectivity, MQTT / REST / Modbus TCP, I/O mapping, and rules. See foxiot.eu/products/wolf-gateway/wolf-app.
- **First-time setup** — step-by-step at foxiot.eu/wolf-setup.
- **Firmware releases** — bundles and changelogs at foxiot.eu/firmware/wolf-gateway.

7 Maintenance

The device is designed for indoor cabinet use and needs minimal maintenance.

- **Cleaning** — disconnect power, then wipe the enclosure with a dry or slightly damp lint-free cloth, no solvents or abrasives.
- **Connectors** — periodically inspect the power, I/O, and network connections, and clean oxidation or debris with electronics-approved contact cleaner or compressed air.

- **Periodic inspection (every 12 months)** — check for mechanical damage, secure mounting, and loose cables, and confirm the recommended firmware version.
- **Firmware** — Wolf-OS and Wolf-App update in-field as signed bundles. Do not remove power during an update. Releases and changelogs: foxiot.eu/firmware/wolf-gateway.

Do not open the enclosure. There are no user-serviceable parts inside. Opening it voids the warranty — see [Warranty limitations](#).

8 Troubleshooting

Hardware-side checks for common field issues. Software diagnostics — networking, automation, and logs — are covered in the [Wolf-OS](#) and [Wolf-App](#) manuals.

Symptom	Check
L1 green LED not blinking	By default L1 (green) blinks as a heartbeat. At boot it stays solid, then begins blinking after ~30 s. If it never starts, measure the – / + terminals: confirm 11.5–30 V DC, correct polarity, and that voltage stays within limits (over-voltage can cause permanent damage).
No Modbus RTU comms	Wire A (+) to every device's A (+) and B (–) to B (–), polarity consistent along the whole chain. Use twisted-pair cable of the correct impedance, with A/B on the same pair. The card has an on-board 120 Ω terminator at its end — check that the far end of the line is terminated too. The "–" terminal also serves as the RS-485 signal ground — as good practice, run a signal-ground wire linking "–" between devices so they share a common reference. Once wiring is confirmed correct, check baud rate, stop bits, and parity — parity is the most common misconfiguration.
No Ethernet	Check the RJ45 cable and switch port. The RJ45 connector has built-in link/activity LEDs — confirm the link LED shows a connection. IP and DHCP configuration is covered in the Wolf-OS docs .
Can't reach the device / IP unknown	Boot into recovery mode for a fixed IP, or factory-reset to restore defaults (network reverts to DHCP). While the button is held during boot, L2 blinks rapidly to confirm the controller has detected it. See the first-time setup guide .
No 4G/LTE	Confirm the SIM is seated and the antenna connected (main antenna on A1). Most LTE problems are not hardware: the SIM PIN must be removed before inserting the card, the operator must have activated the data service, and the APN must be correct. Wolf-App configures the modem automatically — see the setup guide .
Relay not switching	Disconnect the load and measure across the C–NO terminals. When the relay is commanded on, contact resistance should be low (near continuity). You may hear the relay click when it actuates, but a click alone does not confirm the contacts conduct. Overload — especially inductive or capacitive loads beyond the rating — can weld the contacts together.
Any multifunction port — first checks	Confirm the port's role and pull-up in Wolf-App. Each port acts as one type only (DI, DO, 0–10 V, 4–20 mA, NTC, or Wiegand) — a port set for one type will not behave as another. The 10 kΩ pull-up must be on for dry contacts, is auto-managed for NTC, and off for 0–10 V and 4–20 mA.

Symptom	Check
Digital input not read	For a dry contact, switch, or open-collector output, enable the 10 kΩ pull-up in Wolf-App — the pull-up provides the level, so no external voltage is needed. Confirm the contact actually closes and shares the "-" reference. For a live voltage signal, keep it at or below 30 V DC and share "-". A 50 ms debounce plus the boot-time gap means a very short pulse, or one arriving during boot, can be missed.
Digital output not driving	The output is a protected low-side switch — wire the load between an external positive supply and the port, and the port switches the load's return to "-". Keep the load at or below 350 mA. It is off at startup, so confirm Wolf-App commands it on. Built-in short-circuit, over-current, and over-temperature protection latches the output off on a fault — remove the fault and reset. The switch clamps inductive turn-off internally, so an external flyback diode is optional and only needed for large coils.
0–10 V reading wrong or stuck	Confirm the port is set to 0–10 V and the 10 kΩ pull-up is off — an enabled pull-up corrupts a voltage reading. The sensor "-" and the controller "-" must share a reference. Measure the DC volts at the port against "-" and compare to the sensor output. Pinned at 0 means no signal or a broken wire. Pinned at full scale means above 10 V, the wrong terminal, or the pull-up still on. Confirm the sensor has power. The input is high-impedance, and the ADC is 12-bit, so very small changes may not resolve.
4–20 mA reading near 0 or full scale	The port reads 4–20 mA as the voltage across an external burden resistor — confirm the resistor is fitted between the input and "-", and its value matches the scaling set in Wolf-App (250 Ω gives 1–5 V, 500 Ω gives 2–10 V). Keep the pull-up off. Put the meter in series in mA mode to read the actual loop current. Near 0 mA means a broken loop, no loop power, a missing resistor, or reversed wiring. Below 4 mA signals a sensor fault by design. A 2-wire transmitter takes loop power from an external supply in series. A 3- or 4-wire transmitter needs its own power and a shared "-".
NTC temperature wrong, or pinned hot/cold	Use a 10k NTC for best accuracy — it matches the 10 kΩ pull-up. Connect it directly, two leads to the input and "-", with no external resistor — the pull-up is auto-managed and pulsed on only during each reading, so the thermistor does not self-heat. Set the thermistor curve in Wolf-App — a mismatched curve gives a steady offset. The card does not flag NTC faults — they show as out-of-range temperatures. A reading near -273 °C means an open lead or a disconnected sensor. A very high positive reading (hundreds of °C) means a short across the leads. A reading that is consistently high but plausible points to the wrong curve or to lead resistance on a long run.
Wiegand reader gives no card reads	Up to 4 readers are supported, each on a consecutive input pair — ports 1/2, 3/4, 5/6, and 7/8. Within a pair the lower-numbered port is D0 and the higher is D1. Wire reader D0 and D1 to that pair — swapped D0/D1 gives no valid read. The reader "-" must share the controller "-", or the data lines float and no bits arrive. Power the reader at its rated voltage and confirm it is present. If the reader drives D0/D1 as open-collector, enable the 10 kΩ pull-up in Wolf-App. Supported formats are 26-bit and 34-bit cards and 4-bit and 8-bit keypad frames, detected automatically from the frame length — other formats are not read. Keep the cable within the reader's rated length, as long runs corrupt the data.

9 Ordering Information

Item	Order code	Description
Wolf-8ADio1Ro	GW-WOLF-IO-R1	8 multifunction I/O, 1 relay, RS-485 Modbus RTU
Wolf-8ADio1Ro-LTE	GW-WOLF-IO-R1-LTE	As above, with 4G/LTE modem (Quectel EC25-EUX)
Plug-in power adapter	ACC-PSU-12P	12 V DC, 1.5 A (2.1 / 5.5 mm jack)
DIN-rail PSU	ACC-PSU-24D	24 V DC, 1.5 A
LTE antenna	ACC-ANT-M-LTE	Magnet-mount, 50 Ω , ≤ 4 dBi, for the -LTE variant

Order through hello@foxiot.eu or your distributor.

10 Warranty, Support & RMA

10.1 Warranty conditions

FoxIoT OÜ provides a limited warranty for **36 months from the date of purchase**, covering defects in materials and workmanship under normal use, in accordance with this manual and the product's environmental specifications. During the warranty period FoxIoT will repair or replace defective units at no charge, provided the product has not been modified, misused, or subjected to adverse conditions.

- Valid only for original products from FoxIoT OÜ.
- Proof of purchase may be required.
- Warranty service is limited to repair or replacement.
- The warranty does not cover associated costs such as removal, reinstallation, or transportation.

Independent of the warranty period, FoxIoT provides security updates for at least **5 years** from the product's release, as required by EU CRA 2024/2847.

10.2 Warranty limitations

The warranty does **not** apply in the following cases:

- Physical damage from mishandling, impact, fire, or water exposure.
- Damage from improper installation, incorrect wiring, or operation outside the specified limits.
- Modifications or repairs by unauthorized personnel.
- Normal wear and tear.
- Software issues related to non-standard configurations.

The warranty is void if the product has been opened or tampered with in any way not approved by FoxIoT OÜ.

10.3 Technical support

Contact our support team through:

Email	support@foxiot.eu
Support hours	Monday–Friday, 10:00–16:00 EET (Estonian time)
Languages	English, Estonian

Have your device's serial number, firmware version, and a clear description of the problem ready when contacting support.

10.4 RMA process (Return Material Authorization)

To return a product for repair or replacement you must obtain a valid **RMA number** from support — devices returned without one are not accepted.

1. Contact technical support to report the issue.
2. Provide the serial number, a clear description of the issue, and proof of purchase.
3. Receive an RMA number and return instructions.
4. Package the product carefully to prevent shipping damage and include the RMA number.
5. Send the unit to the return address provided by support.

Returns through an authorized reseller or distributor must still be submitted to FoxIoT support to obtain an RMA number. The reseller manages end-customer logistics and documentation. Direct end-customer returns are accepted after support verifies the purchase channel and warranty eligibility.

11 Compliance & Standards

The Wolf Gateway platform is designed and documented to EU industrial and cybersecurity requirements. Product security information is published per the EU Cyber Resilience Act (Regulation 2024/2847).

11.1 Product cybersecurity context

The Wolf platform applies a defense-in-depth strategy:

- **Signed firmware** — Wolf-OS and Wolf-App ship as digitally signed bundles. The updater verifies each bundle's signature before installing it.
- **Secure remote access** — use the built-in VPN (OpenVPN, WireGuard) for remote management. Do not expose management interfaces directly to the public internet.
- **Intended environment** — install inside a locked electrical cabinet, on a segmented automation network behind a firewall.
- **Security updates** — provided for at least 5 years, per EU CRA 2024/2847. Report vulnerabilities to security@foxiot.eu.

Topic	Detail
Directives	EMC 2014/30/EU · RoHS 2011/65/EU · WEEE 2012/19/EU · RED 2014/53/EU (4G/LTE-fitted units)
Cyber Resilience	EU CRA (Reg. 2024/2847) — product security information published
Firmware updates	Signed Wolf-OS / Wolf-App firmware bundles, verified before install
Vulnerability reporting	security@foxiot.eu — coordinated disclosure
Manufacturer	FoxIoT OÜ, Pärnu mnt 148, 11317 Tallinn, Estonia · www.foxiot.eu · support@foxiot.eu

Product Security Information (CRA-UI-001) and signed firmware releases are published at foxiot.eu/legal/security. Report vulnerabilities to security@foxiot.eu.

Disposal (WEEE). Do not dispose of this device with household waste. At end of life, return it to a designated WEEE collection point or to FoxIoT OÜ — see [recycling & disposal](#).

Revision History

Version	Date	Notes
1.2	2026-09-30	Safety — power-supply requirement (SELV with overcurrent protection, 2 A fuse on larger supplies). Relay rating corrected — 5 A @ 30 V AC / 30 V DC (Omron G6DN rated load 5 A @ 30 V DC). Manufacturer postal address added.
1.1	2026-09-29	Radio/LTE antenna safety (RF exposure 30 cm, antenna ≤ 4 dBi), LTE bands and transmit power, RED in directives.
1.0	2026-06-17	Initial release.