

ATLAS

Metering & IoT Connectivity Solutions

PRODUCT DATASHEET / USER MANUAL

ATLAS M-BUS CONVERTER-4G

Standalone LTE Cat.4 M-Bus Gateway with Direct Cloud
Data Transmission to atlasserver.io or Your Own Server

The **ATLAS M-BUS CONVERTER-4G** combines ATLAS's proven M-Bus data-collection platform with an integrated LTE Cat.4 cellular modem, giving utilities, ESCOs and metering integrators a single device that reads, stores and pushes meter data directly to the cloud — with no local PC, SCADA server or external GSM modem required.

4G LTE Cat.4

MQTT Cloud Push

atlasserver.io Ready

EN 13757-2/-3

1. Product Overview

ATLAS M-Bus converters are designed and manufactured in accordance with the M-Bus protocol (EN 1434-3 / EN 13757-2/-3), allowing any meter equipped with an M-Bus interface — heat, water, gas or electricity — to be read out and logged reliably. The **M-BUS CONVERTER-4G** extends this proven platform with a factory-fitted LTE Cat.4 cellular module, turning the converter into a fully autonomous, network-connected M-Bus data concentrator and router.

Where the standard converter relies on a local PC or an external GSM/router device connected through its RS232 port, the 4G model reads the meters, buffers the data locally and transmits it over the mobile network via a secure MQTT connection — either directly to ATLAS's own hosted platform at www.atlasserver.io, or to the customer's own server / web application, with no additional hardware in between. This matches the direction the metering industry has moved worldwide over the last decade: away from site visits and local readout, toward always-on, cellular-connected metering gateways that report autonomously to a central platform.

The device retains full backward compatibility with the base ATLAS M-Bus Converter: active output short-circuit protection, automatic sleep mode for energy saving, buzzer and LED fault alarms, and the internal USB 2.0 / RS232 interface for local commissioning and diagnostics.

What's New in the 4G Model

● Integrated LTE Cat.4 Modem Onboard cellular modem with 2G fallback for wide-area coverage; no external router needed.	● Direct Cloud Connectivity Pushes readings straight to atlasserver.io over MQTT, or to the customer's own MQTT broker / server.
● Single SIM Slot Nano-SIM slot for any GSM operator; APN, PIN and connection parameters are field-configurable.	● Remote, Unattended Operation No PC, laptop or on-site SCADA server required — ideal for remote or hard-to-access installations.
● Store & Forward Buffering Readings are buffered locally and re-transmitted automatically if the mobile network is temporarily unavailable.	● Same Robust M-Bus Core Unchanged M-Bus front end: up to 250 meters per device, overcurrent & short-circuit protection, sleep mode.

Note: ATLAS M-Bus Converters are designed for indoor use. Performance can be affected by liquids, moisture and dirty/dusty environments; install inside a suitable enclosure or cabinet.

2. Cloud Connectivity & atlasserver.io Platform

The M-BUS CONVERTER-4G is built around a cloud-first architecture. Instead of waiting for a technician to collect data on site, the device connects to the mobile network on power-up, authenticates, and streams meter readings to a central platform at a configurable interval.

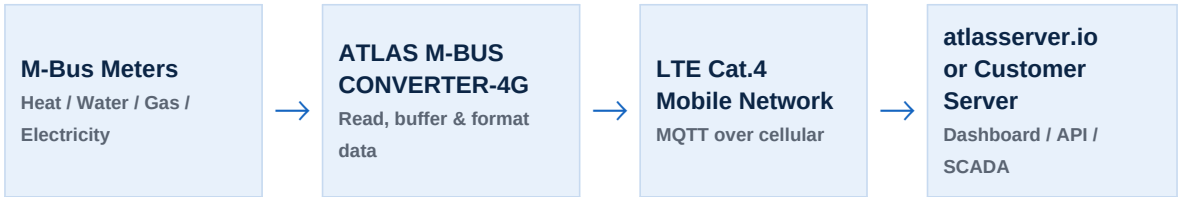
Two Data-Delivery Modes

Mode	Description
ATLAS Cloud (atlasserver.io)	Zero-configuration option: the device reports directly to ATLAS's hosted platform at www.atlasserver.io , where readings, alarms and device status are available through a web dashboard and can be exported or accessed via API.
Customer / Third-Party Server	The device can instead (or in addition) publish to the customer's own MQTT broker or web back-end, enabling full integration into an existing SCADA, billing or smart-metering system without vendor lock-in.

Data Transmission Protocol

Readings are published using **MQTT**, a lightweight publish/subscribe messaging protocol that is the de facto standard for IoT and remote metering applications worldwide, chosen for its low bandwidth use, reliability over cellular links, and broad compatibility with third-party IoT platforms and SCADA systems. Connection credentials, broker address, topic structure, reporting interval and SIM/APN parameters are all configurable per device.

Typical Data Flow



This device-to-cloud path removes the need for a PC running local reading software, an external GSM/SCADA modem, or a technician visiting the cabinet to extract data — the converter itself is the router.

3. Hardware & Wiring Overview

The M-Bus wiring, relay/uplink terminals, USB and RS232 interfaces, power input and status LEDs are unchanged from the base ATLAS M-Bus Converter, ensuring a familiar installation process for existing ATLAS customers and installers. The 4G model additionally includes an internal LTE Cat.4 modem with a Nano-SIM slot and an external SMA antenna connector, housed within the same DIN-rail enclosure footprint.

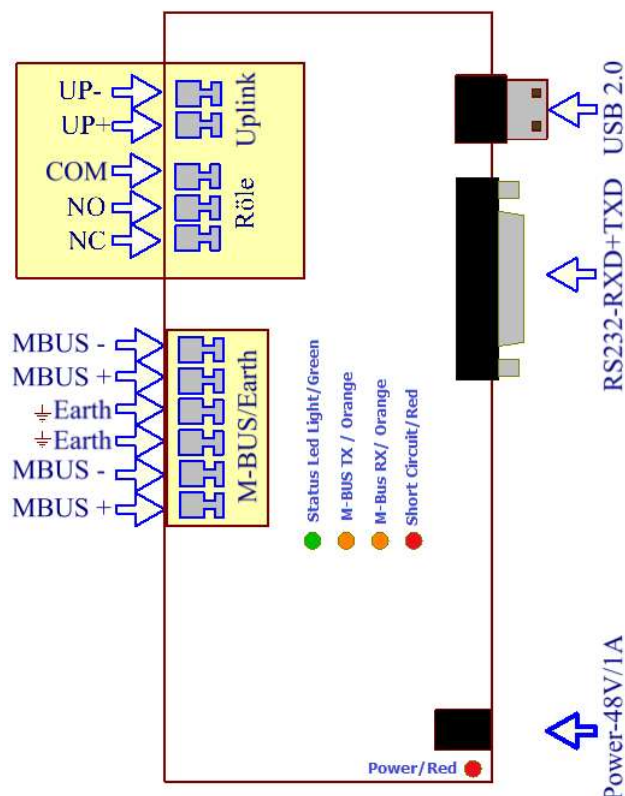


Figure 1. Terminal layout of the ATLAS M-Bus Converter core module (Uplink, Relay, M-Bus/Earth terminals, USB 2.0, RS232, Power). On the 4G model, the SIM slot and SMA antenna connector are integrated into the same enclosure alongside a dedicated 4G network-status LED.

Terminal Summary

Block	Terminals	Function
Uplink	UP+ / UP-	Uplink signalling to master system
Relay	COM / NO / NC	Dry-contact relay output (alarm / control)
M-Bus / Earth	MBUS+ / MBUS- (x2) / Earth (x2)	M-Bus field bus connection to meters, with earth reference
Power	Power 48V / 1A	DC power input (SMPS-type source recommended)
Local Interfaces	USB 2.0 / RS232 (RXD+TXD)	Local commissioning, diagnostics and configuration
Cellular (4G model)	Nano-SIM slot / SMA antenna	LTE Cat.4 mobile network connection

4. Technical Specifications

4.1 General & M-Bus Specifications

Parameter	Value
Power Input	DC 48 V / 1 A
Power Consumption (Active)	Max. 24 W (+ cellular module, see 4.2)
Power Consumption (Sleep Mode)	Max. 5 W
M-Bus Voltage	DC 42 V
Data Transfer Speed (M-Bus)	300 – 19,200 Baud
Working Temperature	-20 °C to +70 °C (indoor use)
Max. Meters per Device	250 meters
Local Interfaces	USB 2.0 (internal USB–RS232), RS232
Enclosure	157 mm x 91 mm x 58 mm, DIN-rail mount type
Standards Compliance	EN 1434-3, EN 13757-2 / EN 13757-3 (M-Bus)

4.2 Cellular / IoT Connectivity (4G Model)

Parameter	Value
Cellular Module	LTE Cat.4 (2G fallback for extended coverage)
SIM Type	Single SIM, Nano-SIM (4FF) slot
Antenna	External antenna via SMA connector
Application Protocol	MQTT (configurable broker, topic, QoS, TLS)
Cloud Destination	ATLAS Cloud (www.atlasserver.io) and/or customer-defined MQTT server
Configuration Parameters	APN, SIM PIN, broker address/port, credentials, reporting interval
Offline Behaviour	Local store-and-forward buffering; automatic re-transmission on reconnect
Network Status Indication	Dedicated LED for signal/registration status (see Section 5)

Exact supported LTE frequency bands and regional/regulatory certifications depend on the cellular module variant fitted for the destination market; please confirm with ATLAS technical sales for the target country prior to order confirmation.

4.3 Protection & Reliability Features

- Overcurrent protection on the M-Bus output
- Short-circuit protection with active output limiting
- Short-circuit alarming via LED indicator and buzzer
- Automatic Sleep Mode for energy saving; wakes automatically on data-read request
- Store-and-forward data buffering to protect against temporary loss of cellular signal
- Internal USB 2.0 (USB–RS232) interface for local diagnostics

5. Status Indicators & Alarms

Indicator	Color	Meaning
Power	Red (steady)	Device is correctly powered.
Status	Green	M-Bus Converter is operating correctly.
M-Bus TX	Orange (flashing)	Data transfer from PC/gateway to the M-Bus line.
M-Bus RX	Orange (flashing)	Data transfer from the M-Bus line to the gateway.
Short Circuit	Red	Flashes for 1 minute on fault detection; steady if the fault persists. Off = no fault.
4G Network (4G model)	Blue	Off: no SIM/registration. Slow flash: searching network. Fast flash: connected, no data session. Steady: registered & connected to cloud.

A buzzer sounds continuously for one minute if a short circuit is detected on the M-Bus line. If the fault persists after the buzzer stops, the M-Bus line must be switched off and re-checked before re-energizing.

6. Installation Guidelines

- Keep the distance between the main M-Bus line and meters within 5 m using 2x0.22 mm² cable; for longer runs, extend using 4x0.22 mm² cable.
- For short runs with few meters, 2x0.75 mm² main line cable is sufficient; for 250 meters or more, use 2x1.5 mm² (or 4x0.75 / 4x1.5 mm² for extensions).
- Connect the M-Bus line to the building's weak-current wiring only — never to a high-current line.
- Always connect the earth terminal correctly; an incorrect earth connection is a common cause of unreliable readings and must be corrected before commissioning.
- For the 4G model, mount the external antenna where cellular signal strength is adequate (check the Network Status LED after power-up) and route the antenna cable to avoid sharp bends.
- Insert the Nano-SIM with the correct orientation only while the device is powered off; configure APN and cloud/broker parameters before final closing of the enclosure.

7. Troubleshooting Guide

7.1 Weak or Incorrect Power Supply

The converter cannot operate correctly if it is not powered within its rated voltage range. Confirm the Power LED is lit and that the supply is within the range stated in Section 8 before connecting meters.

7.2 Short Circuit on the M-Bus Line

The device includes built-in short-circuit and overcurrent protection. When triggered, the LED and buzzer will alarm as described in Section 5. This is most often caused by incorrect cable installation or by exceeding the maximum of 250 meters on a single device. Verify the wiring and meter count before re-energizing the line.

7.3 Data Reading Faults (M-Bus)

- **M-Bus TX LED not lit:** check the connection between the host (PC/gateway) and the converter.
- **M-Bus TX flashing but RX shows no activity:** the meter's serial number/ID may not be registered correctly in the reading system, or the meter wiring should be checked.
- **M-Bus RX flashing continuously / erratically:** excessive noise on the M-Bus line or a damaged meter; verify the earth connection and contact ATLAS technical support if the issue persists.

7.4 Cellular / Cloud Connectivity Faults (4G Model)

- **Network LED off:** confirm the SIM card is correctly inserted, is active with a data plan, and that the PIN (if any) matches the configured value.
- **Network LED slow-flashing (searching):** check antenna connection and placement; relocate the enclosure or use an external/high-gain antenna in areas of weak coverage.
- **Network LED fast-flashing (registered, no data session):** verify the APN configuration matches the SIM operator's requirements.
- **Registered but no data on atlasserver.io / customer server:** confirm broker address, port, credentials and topic configuration; check that outbound MQTT traffic is permitted on the destination server/firewall.

8. Electrical Limits

Parameter	Nominal	Min.	Max.
Vin (Supply Voltage)	DC 48 V	DC 36 V	DC 50 V
Iin (Input Current)	1 A	0.8 A	–
V M-Bus	DC 42 V	DC 32 V	DC 48 V
I M-Bus	–	–	0.6 A
Working Temperature	–	-20°C	+70°C
Meters per Device	–	–	250
RS232 Signal	–	–	±12 V
USB Vcc	–	4.4 V	5 V
USB Signal	–	–	5 V

9. Model Comparison

The 4G model is fully compatible with the standard ATLAS M-Bus Converter installation base and can be selected according to the connectivity needs of the project:

Feature	ATLAS M-BUS CONVERTER	ATLAS M-BUS CONVERTER-4G
Local PC readout (USB/RS232)	Yes	Yes
External GSM/SCADA modem support	Yes (via RS232)	Not required (integrated)
Integrated LTE Cat.4 modem	–	Yes
Direct cloud transmission (MQTT)	–	Yes — atlasserver.io or customer server
Store-and-forward buffering	–	Yes
Max. meters per device	250	250
Enclosure / mounting	DIN-rail, 157x91x58 mm	DIN-rail, same footprint

For pricing, regional cellular-band configuration, or integration support (custom MQTT topics, API access to atlasserver.io, or bulk device provisioning), please contact ATLAS technical sales.