

Resilient infrastructure through clear architectural separation

The JUMBO BLOCK® architecture follows a core principle required for modern critical infrastructure: **Local exposure without local control**.

Sensors installed at the site are strictly limited to measurement and data transmission. They have no capability to control, configure, or influence system behavior.

All operational control is centralized within a protected dashboard environment, which can be operated independently of the physical installation site and secured according to organizational requirements.

If required, system events and data integrity can be independently verified via an external cryptographic integrity layer (IOTA).

Why this matters for operators and authorities

- Physical damage does not result in loss of operational control
- Failures become visible immediately instead of remaining undetected
- Recovery procedures are standardized and fast
- Governance, responsibility, and accountability remain centralized



Integrity Layer - IOTA

- Security cryptographic feature
- Anchoring of events
- Independent verification
- No control function
- Optional, not operationally relevant

Web Access (Client)



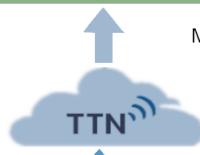
- Maintenance
- On-site / Remote

Control Plane - JUMBO BLOCK® Dashboard



Message Transport Layer

Sensor integration management
No access to the operational level
Transmission of sensor payloads



Measurement data

TTN
LoRaWAN

Edge-mounted sensors

- Physically exposed
- Replaceable
- No admin login
- No control access



Field Operations

Installation & Maintenance
Modules, Sensors and Gateways

Architectural principles: The system measures. The dashboard controls. IOTA verifies.

Damage at the site does not mean loss of control — the system remains manageable, verifiable, and resilient.

JUMBO BLOCK®
ZANNI GROUP
Brauhof 12
44866 Bochum

Phone: +49 (0) 2327 4178 191
Fax: +49 (0) 2327 4178 192
E-Mail: mail@jumboblock.de
Web: jumboblock.de

Registration: Court Bochum, Germany
Register Number: HRA 7687
VAT ID: DE340292357