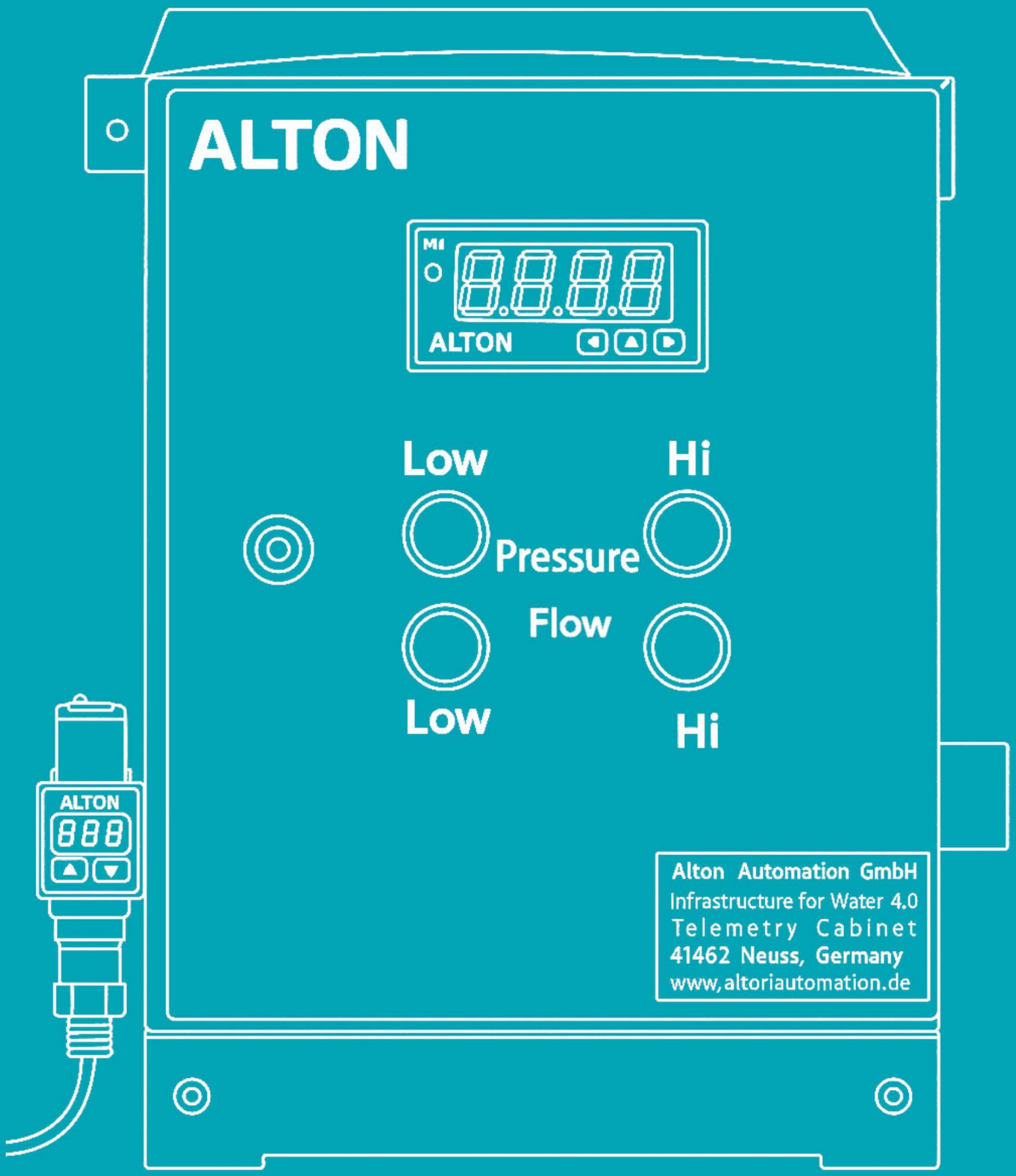
ALTON



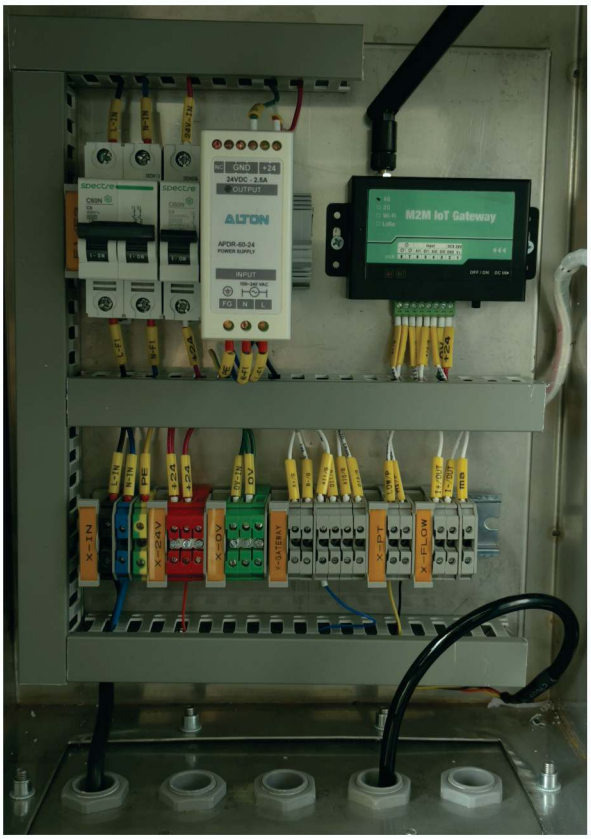
Ready-To-Install Cabinet Catalogue

1.Introduction & Mission

In today's digital era, critical infrastructure such as water, energy, and industrial networks face increasing challenges including resource scarcity, demand for rapid response, and the need for centralized management. ALTON Automation GmbH's ready-to-install cabinet systems are engineered to deliver maximum reliability and flexibility with minimal setup time.

These cabinets are the result of field experience and proven engineering, designed to integrate process monitoring, control, and data transmission in a single industrial solution—fully adaptable to diverse customer needs and independent of any specific equipment brand.

Our mission: - Enable rapid deployment and commissioning - Ensure resilient performance under extreme conditions - Support local and cloud-based management - Provide scalable solutions for expanding infrastructure projects





2. Core Features of ALTON Panels

Regardless of the component brand, all ALTON cabinets share a robust set of standard features that make them a trusted and intelligent industrial solution:

- **On-site data acquisition and display** via HMI or text-based displays
- **Remote data transmission** over multiple communication options (LTE/4G, Ethernet, Wi-Fi, LoRa, Radio)
- **Support for industry-standard protocols:** Modbus RTU/TCP, OPC UA, MQTT, DNP3, IEC104, and more
- **Local data archiving** during network outages with automatic sync recovery
- **Onboard logic execution:** from simple alarms to advanced PLC-controlled scenarios
- **Redundant communication and dual SIM failover**
- **Cloud and SCADA platform integration**
- **Optional internal UPS and SLA battery system**
- **Automated alerting via SMS or email**
- **Industrial-grade rugged enclosure (IP65/IP67)** with long lifecycle components

3. Flexible Architecture & Modular Design

Designed with a modular architecture, ALTON panels are easily configurable to meet the technical demands of any industrial or infrastructure project.

Key modular components include:

- **Customizable I/O modules:** digital, analog, RTD, pulse, and more
- **Flexible controller options:** Edge devices to full PLCs based on control logic complexity
- **Expandable communication modules:** LTE, Wi-Fi, LoRa, RS-485, CAN, etc.
- **Optional internal UPS and SLA battery configurations**
- **Local interfaces:** text displays or full-color HMIs
- **Tailored enclosures:** metal, polycarbonate, waterproof and environment-specific formats

4. Communication & Protocol Support

ALTON panels support a wide range of industrial communication interfaces and protocols, enabling seamless integration into diverse infrastructure networks.

Supported Interfaces & Protocols:

Communication Type	Features & Applications
Ethernet (TCP/IP)	High-speed local connectivity for core and plant-side applications
Cellular (4G/LTE)	Remote access with dual SIM and APN support for critical telemetry
Wi-Fi (2.4GHz / 5GHz)	Ideal for wireless LAN or hybrid environments
LoRa / LoRaWAN	Long-range, low-power networks for remote or rural deployments
RS-232 / RS-485	Traditional serial connections for existing sensors and PLCs
Radio Communication	Private radio for regions with no cellular coverage or high security
Modbus RTU / TCP	Industry-standard for device communication
OPCUA	Secure and scalable communication with modern SCADA systems
MQTT	Lightweight IoT protocol for cloud integration and analytics
DNP3.0 / IEC 101/104	Energy sector protocols for grid monitoring and critical infrastructure

Advanced Networking Capabilities: - Dedicated APN support for isolated secure communication - Built-in VPN (IPSec/OpenVPN) and configurable firewall - Redundant interface failover and link monitoring - SMS alerting on link failure or signal degradation

5. Data Management & Visualization

ALTON panels are equipped with advanced data handling capabilities to ensure operators have full visibility and access to historical and real-time system performance.

• Key Data Management Functions:

Local data logging to SD/eMMC during network downtime - Scheduled or event-based data upload to cloud/local servers - Simultaneous multi-destination publishing (Cloud + Local SCADA) - Long-term historical archiving for performance trend analysis

• Visualization & Analysis Features:

Live display of parameters via local HMI or remote dashboards - Custom dashboards per station or application area - Graphical trends, daily/weekly statistics, and comparison charts - Visual and audio alarms for threshold breaches or system events

• Compatible Platforms:

Industrial SCADA: Siemens WinCC, Ignition, iFix - Cloud services: Public or private clouds supporting MQTT/HTTPS - Open IoT dashboards: ThingsBoard, Node-RED, OpenRemote

6. Edge Computing & Local Logic

ALTON panels include edge processing capabilities that enable autonomous operation even in isolated conditions or during network outages.

• Two Levels of Local Logic Execution:

- Basic Logic via Edge Controller:
  - o Trigger alarms or control relays based on sensor input
  - o Operate local pumps/valves using simple rules
  - o Schedule periodic data transmission

- Advanced Logic via Industrial PLC:
  - o Execute multistep control strategies
  - o Coordinate multi-site behavior (master/slave architecture)
  - o Adaptive control based on environmental or flow conditions

• Edge Advantages:

- Instant response to field events without central delay - Reduced load on SCADA/cloud infrastructure - Continued operation during communication loss

These edge-enabled control capabilities position ALTON panels as standalone smart nodes—fully functional in remote, low-bandwidth, or high-reliability applications.

7. Redundancy & Fail-Safe Operations

Resilience is at the core of ALTON panel design. These systems are engineered with redundancy and fail-safe mechanisms to ensure uninterrupted operation even during power loss, network failure, or hardware issues.

• Key Redundancy Features:

- **Multi-layered communication redundancy:** Simultaneous LTE, Wi-Fi, Ethernet, and LoRa support
- **Dual SIM failover:** Automatically switches to backup SIM when primary fails
- **Independent dual SIM use:** One SIM for data/APN and the other for SMS alerts
- **Optional UPS & SLA battery support:** Ensures local system uptime during blackout events
- **Offline local data storage:** Continues logging even if cloud/SCADA link is lost
- **SMS module for fallback alerts:** Independent GSM-based warning system

• Operational Safety Measures:

- Fanless thermal design for reduced mechanical failure
- Wide ambient temperature support and industrial-grade components
- Surge protection, watchdog timers, and auto-recovery features

These safeguards make ALTON panels a secure choice for mission-critical applications.

8. Cybersecurity & Remote Access

ALTON panels provide built-in cybersecurity tools and remote access features that meet the requirements of modern industrial networks and cloud-based management platforms.

• Cybersecurity Functions:

- **Secure Boot and ARM TrustZone support**
- **Private APN and firewall for protected communication**
- **VPN tunneling (IPSec/OpenVPN)** with configurable access controls
- **Role-based user access with audit logs**
- **Encrypted firmware updates with authentication**

• Remote Access Capabilities:

- Remote firmware/configuration updates via web UI or cloud platform
- Live diagnostics and log streaming
- Remote control of I/O, device restart, or logic overrides
- Alerts via email, SMS, or cloud dashboard

Combined with industrial-grade reliability, these security layers ensure long-term peace of mind.

9. Monitoring & Control Center Integration

ALTON panels are designed to integrate effortlessly with centralized control rooms and SCADA/cloud platforms.

• Integration Features:

- Full compatibility with industry-leading SCADA software (e.g., WinCC, Ignition, iFix)
- Seamless data publishing via Modbus TCP, MQTT, OPC UA, and IEC104
- Remote command reception (start/stop pumps, reset controllers, adjust thresholds)
- Dynamic HMI/SCADA dashboards for real-time visualization
- Multi-station aggregation and centralized analysis

• Infrastructure Compatibility:

- Connect via Ethernet, RS-485, or wireless (4G + APN or VPN)
- National or cross-border cloud integration through encrypted channels

This flexibility enables ALTON systems to fit within existing infrastructure or power new digital initiatives from the ground up.

10. Deployment Scenarios & Applications

ALTON's ready-to-install panels are suited for a wide range of infrastructure and industrial applications. Their modular hardware, flexible software capabilities, and field-tested reliability make them ideal for both new installations and retrofit projects.

• Common Use Cases:

- **Water & Wastewater Pump Stations:** Real-time tank level monitoring, pump pressure control, local alarms, autonomous fallback logic
- **Storage Reservoirs & Transmission Pipelines:** Remote level/pressure sensing, threshold alerts, cloud data forwarding
- **Agricultural or Municipal Wells:** Flow metering, pump management, SMS alarm capability in areas with weak connectivity
- **Power Substations & Energy Panels:** Voltage and current monitoring, fault detection, secure data transmission
- **Industrial Plants & Greenhouses:** Sensor-based environment control, autonomous logic, web visualization
- **Smart City Infrastructure:** Weather, air quality, or environmental sensing nodes with LoRa or 4G connectivity

• Mounting Options:

- Wall or column-mounted in utility kiosks
- Rack installation for outdoor or local enclosures

IP65/IP67-certified builds for harsh environments

11. Available Models & Options

ALTON panels are tailored per project, but standard model configurations are available to accelerate delivery and integration. Based on project scope, a cabinet can be designed solely for monitoring or fully act as a local control unit.

• Standard Models:

Model RTU/PLC-	Primary Function	Connectivity	Controller	UPS	Additional Notes
Basic RTU/PLC-	Monitoring & data push	4G + GPRS Ethernet	Edge Controller	Optional	Ideal for simple water or utility stations
SCADA RTU/PLC-	SCADA-connected local control	4G + GPRS Modbus TCP	Industrial PLC	Optional	Compatible with SCADA platforms like WinCC, iFix, Ignition
SMS RTU/PLC-	SMS-based alarms + fallback logic	GSM	Compact Controller	Optional	Designed for wells and isolated sites with poor data coverage
Cloud	Cloud-native IoT telemetry	4G + MQTT OPC-UA	IoT Gateway	Optional	Works with ThingsBoard, Node-RED, OpenRemote and similar platforms

• Customizable Options:

- **Controller Type:** Edge device, Mini-PLC, or full-featured PLC
- **I/O Count:** Configurable from 4 to 32 points
- **Power Input:** 24VDC or 230VAC with/without integrated UPS
- **Protocols:** Modbus RTU/TCP, MQTT, OPC UA, DNP3, IEC104, and more
- **Local Display:** None, LCD text display, or full HMI touchscreen
- **Cabinet Construction:** Metal or polycarbonate, up to IP67 protection

12. Installation & Maintenance

ALTON panels are designed for rapid deployment, simplified commissioning, and minimal long-term maintenance. Industrial-grade components and documentation ensure repeatable and dependable integration.

• Installation Workflow:

- Wall/rack mounting based on pre-defined schematics
- Field wiring connection per labeled I/O layout
- Initial commissioning via local or remote interface
- Connectivity validation with cloud/SCADA backends
- UPS, alerting, and automation testing per order specs

• Documentation & Training:

- Full installation manual with electrical diagrams
- Operator and technician training (on-site or remote)
- Commissioning checklists and maintenance logs
- Secure update procedures and cloud sync manuals

• Serviceability:

- Fanless design and modular internals for high durability
- Remote monitoring of health status and battery life
- Hot-swappable modules (for select models)
- Backed by ALTON support teams in Germany, Iran, and the Middle East

13. References & Projects

ALTON's ready-made control cabinets have been successfully deployed in various infrastructure projects, proving their reliability, scalability, and real-world value across different sectors.

• Selected Projects:

- **Kerman Water & Wastewater Company – Iran**
  - o Monitoring pump stations and reservoir levels
  - o Encrypted APN-based 4G telemetry
  - o SMS alerts for pressure drop or tank overflow
- **Greenhouse Automation in Eastern Isfahan**
  - o Temperature and irrigation control via local logic
  - o Cloud dashboard integration for analytics
- **Industrial Substation Monitoring**
  - o Voltage and current logging with SCADA integration
  - o Deployed in harsh temperature environments

• Client Feedback Highlights:

Feedback Highlights:

- Quick and error-free installation with pretested panels
- Reduced maintenance field visits due to remote monitoring
- Improved data accuracy and process diagnostics
- Operator-friendly interfaces and configurable alarms

• Support & Collaboration:

- Technical assistance from ALTON Europe, Eurasia and MENA.
- Full documentation for client reporting and audit trails
- Custom engineering support for new regional deployments

These proven implementations are only part of ALTON's commitment to building smart, resilient, and scalable control infrastructure across industries.



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