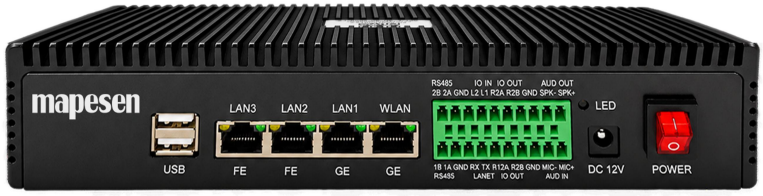
AI16-BOX-P-E1

16CH AI Mini Server (Premium)



Product Feature

Device Connectivity

- Connects to HD IP cameras compliant with ONVIF, RTSP, RTMP and WebRTC.
- Supports H.265/H.264 video and IP cameras up to 8 MP.

Intelligent Applications

- Total capacity: Up to 300,000 face images across 64 databases.
- Combined algorithms: Face mode and hybrid mode (face-to-person association + structured video analytics).
- Face recognition: Up to 8/16 video streams at full load.
- Structured video analytics: Up to 8/16 video streams at full load.
- Perimeter alerts: Up to 8/16 video streams at full load.
- Behavior alerts: Up to 8/16 video streams at full load.
- Supports face capture, face matching alarms and unknown-person alerts.
- Recognizes facial attributes, including gender, age, hats, glasses and masks.
- Captures faces, people, motor vehicles, non-motor vehicles and license plates; supports face-to-person and person-to-non-motor-vehicle association.
- Analyzes person attributes, including upper/lower clothing colors and styles, backpacks and safety helmets.
- Analyzes vehicle attributes, including motor vehicle type, color, make and direction of travel, and non-motor vehicle type.
- Supports license plate recognition and license-plate-to-motor-vehicle association.
- Supports smoke, flame and fire extinguisher recognition, and clutter accumulation alarms.
- Supports intelligent perimeter alerts, including area intrusion and illegal parking.
- Supports behavior alerts for running, falls, smoking, phone calls, looking at a phone, sleeping on duty, fighting and calls for help.

- Supports custom algorithm development for specific industries.

System Features

- Supports software platforms such as GB28281.
- Provides extensive RESTful APIs for integration with third-party platforms.

Application Scenarios

- Provides face recognition, structured analysis of all target types and intelligent alerts. With upper-level platform software, it supports end-to-end workflows for face capture and recognition, structured video analytics and intelligent alerts. Supports secondary development and AI algorithm expansion.
- Suitable for smart factories, hazardous chemical monitoring and various early-warning applications.
- Suitable for locations requiring face recognition, including entrances and exits of smart residential communities and office buildings, watchlist management and recognition alarms, and unknown-person identification.
- Suitable for structured analytics requiring capture of faces, people, motor vehicles, non-motor vehicles and license plates, and license plate recognition; for example, people/vehicle management in smart campuses and license plate recognition in smart communities.

Supported Algorithms (over 60 built-in algorithms)

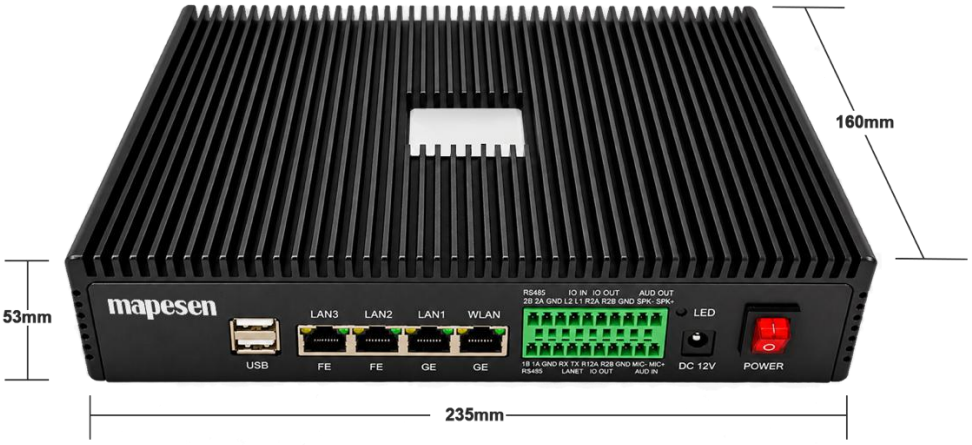
Image Capture	
A. Structured Capture	**1)** Faces **2)** People **3)** Motor vehicles **4)** Non-motor vehicles **5)** License plates
B. Capture Functions	Scheduled capture
Recognition	
Person and Vehicle Recognition	**1)** Face recognition and matching **2)** License plate recognition and matching
Alerts	
A. Environmental Anomalies	**1)** Flame alarms **2)** Smoke alarms **3)** Fire safety equipment detection **4)** Clutter accumulation **5)** Warning signs **6)** Improper fuel unloading **7)** Lens obstruction **8)** Camera displacement **9)** Animal detection **10)** Object movement **11)** Rat detection **12)** Bird detection **13)** Cat/dog detection
B. PPE Violations	Alarms for **1)** No safety helmet **2)** No mask **3)** No workwear **4)** No safety harness **5)** No reflective vest
C. Perimeter Alerts - People	**1)** Loitering **2)** Wall climbing **3)** Intrusion **4)** Line crossing **5)** Excessive occupancy **6)** Insufficient occupancy **7)** Person leaving **8)** Overstaying
D. Abnormal behavior	**1)** Falls **2)** Smoking **3)** Phone calls **4)** Looking at a phone **5)** Running **6)** Sleeping on duty **7)** Leaving a post **8)** Crowding **9)** Fighting **10)** Calls for help **11)** Driver fatigue
E. Perimeter alerts - vehicles	**1)** Motor vehicles in no-parking zones **2)** Motor vehicle departure **3)** Non-motor vehicles in no-parking zones **4)** Non-motor vehicle departure **5)** Riding without a helmet 6. Motor vehicle count above threshold **7)** Motor vehicle count below threshold **8)** Prohibited entry of special vehicles (19 types)

	9) Riding a motorcycle into a gas station

Model Number	AI16-BOX-P-E1
System Parameters	
CPU	Quad-core Cortex-A53@1.3 GHz, integrated NPU, up to 28.8 TOPS
Memory	2×LPDDR4X, 2×4GB
Flash	64GB eMMC
Operating System	Embedded Linux, version 4.19.125
Device Connectivity	
Video Input	ONVIF, RTSP, WebRTC, RTMP Video Resolution: Unrestricted, including 720 x 480, 1280 x 720, 1280 x 960, 1920 x 1080 (2MP), 2560 x 1440 (4MP) and 3840 x 2160 (8MP).
Video Decoding	H.264/H.265
Maximum Input Capacity	16 channels of 1080p video at 25fps
Video Re-encoding	Overlays algorithm results on 16 video channels and re-encodes them into multiple streaming formats.
Intelligent Analytics	
AI algorithms: Multiple algorithms run in parallel and can be configured per channel, including face recognition, structured analytics, behavior alerts and environmental anomaly detection.	**Face-to-person association + face recognition**: Up to 8/16 channels at full load Face capture, face recognition, facial attributes, person capture, person attributes and face-to-person association
	Structured video analytics: Up to 8/16 channels at full load **Image capture**: Faces, people, motor vehicles, non-motor vehicles and license plates **Attribute output**: Faces, people, motor vehicles, non-motor vehicles and license plates **License plate recognition** **Associations**: Face-to-person, vehicle-to-license-plate and person-to-non-motor-vehicle
	Behavior Detection Algorithms **Abnormal behavior**: **1)** Falls **2)** Smoking **3)** Phone calls **4)** Looking at a phone **5)** Running **6)** Sleeping on duty **7)** Leaving a post **8)** Crowding **9)** Fighting **10)** Calls for help **11)** Driver fatigue
	Alert Algorithms - Intelligent Alerts **A. Environmental anomalies**: **1)** Flame alarms **2)** Smoke alarms **3)** Fire safety equipment detection **4)** Clutter accumulation (8 waste types) **5)** Warning signs **6)** Improper fuel unloading **7)** Lens obstruction **8)** Camera displacement **9)** Animal detection **10)** Object movement **11)** Rat detection **12)** Bird detection **13)** Cat/dog detection **B. PPE violations**: Alarms for **1)** No safety helmet **2)** No mask **3)** No workwear

	4) No safety harness **5)** No reflective vest **C. Perimeter alerts - people**: **1)** Loitering **2)** Wall climbing **3)** Intrusion **4)** Line crossing **5)** Excessive occupancy **6)** Insufficient occupancy **7)** Person leaving **8)** Overstaying **D. Perimeter alerts - vehicles**: **1)** Motor vehicles in no-parking zones **2)** Motor vehicle departure **3)** Non-motor vehicles in no-parking zones **4)** Non-motor vehicle departure **5)** Riding without a helmet **6)** Motor vehicle count above threshold **7)** Motor vehicle count below threshold **8)** Prohibited entry of special vehicles (19 types) **9)** Riding a motorcycle into a gas station
Event Reporting	1) Face capture, face recognition and facial attribute results 2) Capture and attributes of faces, people, motor vehicles, non-motor vehicles and license plates; license plate recognition results 3) Security alerts 4) Scheduled capture
Faces	Capture rate ≥ 99%
	False capture rate < 1%
	Allowlist recognition pass rate > 99.5%
	False recognition rate < 0.5%
	Maximum face database: 300,000 portraits
People	Capture rate ≥ 95%
	False capture rate < 1%
Motor Vehicles	Capture rate ≥ 90%
	False capture rate < 1%
Non-motor Vehicles	Capture rate ≥ 95%
	False capture rate < 1%
License Plates	Capture rate ≥ 95%
	False capture rate < 1%
	Recognition rate ≥ 95%
Other Alerts	Alarm rate ≥ 90% when the target is larger than 100 x 100 pixels
Platform Expansion	
AI Expansion	Supports AI algorithm expansion and remote upgrades/deployment.
Platform Integration	Integration with upper-level platforms via UDP, TCP, HTTP and Web APIs
National Standard Support	Supports GB28181 platform cascading.
Interfaces	
Network Ports	4 RJ45 Ethernet ports: 2 x 100/1000 Mbps + 2 x 100 Mbps auto-sensing
WiFi	Supports 2.4/5 GHz Wi-Fi and AP mode.
4G/5G	Supports dual 4G/5G and dual SIM cards operating independently on separate networks.

Alarm Inputs	2 digital I/O channels
Alarm Outputs	2 digital I/O channels
Audio Output	1 channel
Audio Input	1 channel
USB Ports	2 x USB 2.0 ports
RS485	2 channels
SATA	1 SATA drive
Reset Button	1
Power Indicator (PWR)	1
Status Indicator (RUN)	1
HDMI Port	1 x 2.0 HDMI port
TF Card Slot	1 x on-board TF card slot
Expansion	4 x UART, 5 x I2C, 1 x SPI
System Functions	
Face Recognition	Employee access at entrances/exits; watchlist management and recognition alarms; unknown-person identification
Structured Video Analytics	Capture and attribute analysis of faces, people, motor vehicles, non-motor vehicles and license plates; license plate recognition
Network Protocols	TCP/UDP/HTTP/MULTICAST/DHCP/FTP/NTP/HTTPS/RTSP, etc.
Embedded Web Interface	Supports plugin-free video viewing and alarm image information lists.
Log Search	Query, search and display capture information for faces, people, motor vehicles, non-motor vehicles and license plates.
Environmental Requirements	
Operating Temperature	-20°C to +60°C
Storage Temperature	-30°C to +70°C
Relative Humidity	10% to 90% RH, non-condensing
Other Specifications	
Power Supply	DC 12V ±10%, 3 A
Chassis	Metal Chassis
Dimensions (L x D x H)	235 x 53 x 160mm
Weight	< 2 kg
Package Dimensions	284 x 79x 249mm
Overall Dimension	


160mm
53mm
mapesen
LAN3
LAN2
LAN1
WLAN
USB
FE
FE
GE
GE
LED
DC 12V
POWER
235mm