INTELLIGENT 4G HD MOBILE DVR

MDR820X Series

Integrated ADAS DMS Face ID and Optional BSD



This manual provides an English product overview, feature description and technical specifications for the MDR820X series mobile DVR. It is intended for system integrators, fleet operators and technical teams evaluating an eight-channel vehicle video and active-safety platform.

English Edition | Version 1.0

Product Overview

The MDR820X series is an industrial mobile digital video recorder for vehicle surveillance, fleet visibility and active driving-safety applications. It combines eight-channel 1080P AHD recording, H.265 compression, 4G and Wi-Fi communications, GNSS positioning, local storage and AI-assisted event detection in a rugged all-metal enclosure.

Capability	Summary
Video	Up to 8-channel 1080P AHD input and 120 fps total recording
Compression	H.265, H.264 and MJPEG multi-stream encoding
AI	1.0 TOPS NPU for ADAS, DMS, Face ID and optional BSD
Storage	One SD card plus one optional 2.5-inch HDD
Connectivity	4G, dual-band Wi-Fi and RJ45 Ethernet
Positioning	GPS and BeiDou standard; GLONASS and RTK optional
Power	DC 8-36 V wide-voltage input with vehicle-grade protection

Key Features

- High-performance AI processor with hardware H.265 compression. At equivalent image quality, H.265 can reduce transmission bandwidth and storage consumption by approximately 40% compared with H.264.
- 1.0 TOPS NPU computing capability supporting ADAS forward active-safety warnings, DMS risky-driving behavior analysis, Face ID driver authentication and optional BSD blind-spot detection.
- Safety warning prompts in Chinese, English, Spanish, Russian, Portuguese, French, Vietnamese, Thai, Korean and other languages.
- AI active-safety events and user-defined I/O alarms can upload alarm snapshots and short video clips to the server and forward notifications by email.
- Menu languages include Chinese, English, Russian, Spanish and Korean. A supported maintenance app can be used for parameter setting, calibration and modification without connecting a display.
- 4G operation and maintenance server support enables remote parameter configuration, firmware upgrades and fault diagnosis.

Core Product Functions

- H.265/H.264 hardware compression with up to eight channels of 1080P analog HD video input and up to two video outputs.
- Four audio inputs, including one microphone/intercom input, and one audio output.
- DC 8-36 V adaptive wide-voltage input, vehicle-grade power design, low-power operation, regulated 12 V output and optional UPS power protection.
- One SD card plus one HDD for recording; one USB port for data backup and device upgrades.
- Six alarm inputs and two switch-type alarm outputs.
- One RS232 port and one RS485 port for peripheral integration.
- GPS/BeiDou positioning with optional GLONASS and RTK, plus G-sensor expansion.
- 4G and Wi-Fi communications for remote monitoring and data download.
- Integrated RJ45 Ethernet interface for remote control, transmission and download.
- Integrated TTS with Chinese and English voice broadcast, intercom and text-dispatch functions.
- OTA automatic firmware upgrades for easier maintenance and version management.
- Multiple maintenance methods: professional O&M software over Wi-Fi or 4G, or local operation through a monitor using a remote control or mouse.

Video Recording and Display

- H.265/H.264 compression and multi-stream recording. Supports a maximum total of 120 fps across eight 1080P channels. Mixed camera inputs at 1080P, 960P, 720P and D1 are supported.
- Four audio inputs, including one microphone/intercom input, and one audio output.
- Up to two video outputs: one rear analog output and one optional VGA output.
- Automatic, ignition-triggered, manual and alarm-triggered recording modes.
- Overlay of vehicle status, license plate, route, driver information, speed and other operating data for easier fleet management.

Vehicle Power and Data Protection

- Professional vehicle power design with DC 8-36 V input, configurable delayed shutdown, scheduled power on/off, and overload, undervoltage, short-circuit and reverse-polarity protection.
- DC 12 V and DC 5 V outputs provide regulated power for cameras, small displays and other peripherals.
- Optional supercapacitor power-loss protection allows the device to continue operating for approximately 5-8 seconds after all external power, including the backup battery, is disconnected, helping finalize the recording file.
- SD card and HDD recording with physical and digital vibration-protection technology for vehicle environments.
- Pre-allocated vehicle file system reduces file fragmentation caused by repeated overwriting and helps maintain recording integrity.
- Watchdog-based automatic recovery improves operating stability and recording reliability.

Positioning Connectivity and Remote Management

- Standard GPS/BeiDou dual-mode positioning. Optional GLONASS and RTK high-precision positioning modules are available. The system supports speed display, route deviation and area deviation alerts.
- Integrated three-axis G-sensor supports snapshot, recording and upload actions for impact, rollover and other acceleration events.
- 4G and Wi-Fi expansion supports remote live view, control and data download.
- The optional built-in Wi-Fi module supports AP and Station modes. In Station mode, the recorder can automatically connect to Wi-Fi to back up recordings and reduce mobile data usage.
- Remote functions include audio/video monitoring, two-way voice intercom, PTZ control, manual alarm, overspeed alarm, geofence alarm and route deviation alarm.
- The RJ45 interface can connect to an IPC or other network device for data transfer and sharing.

Alarm Inputs Outputs and Peripheral Expansion

- Six configurable I/O alarm inputs for emergency alarm, door status, lighting, steering, braking, reversing and other signals.
- Two alarm outputs for linkage with audible/visual alarms, fuel cut-off or power cut-off controls.
- Alarm inputs can trigger local snapshots and video clips, upload them to the server and forward them by email. At least 2,000 images can be retained.
- RS232 and RS485 support PTZ control, fuel level sensors, temperature and humidity sensors, taximeters, load sensors, panic panels, LED displays, alcohol testers and other peripherals.
- Integrated TTS supports monitoring, voice announcements and two-way intercom.

AI Active Safety

- ADAS functions include lane-departure warning, forward-collision warning, short following-distance warning, pedestrian and non-motorized vehicle recognition, and road-sign recognition.
- DMS functions include eye-closure, drowsiness and yawning detection, distraction detection, phone-use detection and smoking detection.
- Driver Face ID supports driver identification and attendance management.
- BSD blind-spot detection is optional.
- Active-safety alarms can upload images and short videos. Alarm media can also be forwarded by email in real time.

Protocols Applications and Upgrades

- Supports JT/T 808, JT/T 1076 and GB 28181 protocols. Active-safety functions support applicable Standard 115 and relevant Jiangsu, Jilin and Guangdong provincial requirements.
- A supported iOS/Android mobile application provides remote monitoring. A supported mobile maintenance application can perform Wi-Fi-based parameter configuration, calibration and data download.
- Firmware can be upgraded from storage media or through OTA remote automatic upgrade. Partition backup technology helps reduce upgrade failure risk.
- Industrial all-metal enclosure with reliable operation and support for volume customization based on project requirements.

Configuration note: Functions identified as optional depend on the selected hardware, software license, camera and regional network module.

Technical Specifications

The following specifications describe the MDR820X series configuration covered by this manual.

Category	Item	Specification
System	Operating system	Embedded Linux
Video and codec	Video input	8-channel AHD 1080P analog HD input; aviation connectors; 1.0 Vp-p; 75 ohm
Video and codec	Video output	1 composite output and 1 VGA output; 1.0 Vp-p; 75 ohm; supports single, 2, 4 and 9-view display
Video and codec	Preview	Single, 2, 4, 5, 6, 8 and 9-view layouts; manual or event-triggered full-screen display
Video and codec	Recording resolution	1080P, 960P, 720P, D1, HD1 and CIF; up to 8-channel 1080P recording/playback at 120 fps total
Video and codec	Recording quality	Levels 0-7; level 0 is highest and level 7 is lowest
Video and codec	Codec	H.265, H.264 and MJPEG multi-stream encoding/decoding
Video and codec	Recording modes	Automatic by default; ignition-triggered, manual and alarm recording supported
Video output	Analog output	Up to 2 rear outputs using aviation connectors; configuration may include 1 analog and 1 VGA output
Audio input	Channels	4 channels
Audio input	AGC	Automatic
Audio input	Sampling rate	8 kHz / 16 kHz
Audio input	Sampling depth	16 bit
Audio output	Connector	4-pin 12M-4B aviation connector
Audio output	Channels	1 channel
Audio output	Mute	Supported

Technical Specifications Continued

Category	Item	Specification
Positioning	GPS/BeiDou	Dual-mode positioning supported as standard
Positioning	Accuracy	<=10 m with 95% probability
Positioning	Start time	Hot start <=5 s; cold start <=45 s
Positioning	Update interval	1 s
3G/4G	Module type	Built-in 4G wireless transmission; TDD-LTE and FDD-LTE
3G/4G	Supported bands	UMTS 850/900/1900/2100 MHz; HSUPA/HSDPA 850/1900/2100 MHz; GSM/GPRS/EDGE 850/900/1800/1900 MHz
3G/4G	Protocols	UDP and TCP/IP
3G/4G	Voice	HR, FR, EFR and AMR
3G/4G	SMS	Supported
3G/4G	Transmit power	EGSM 850/900: 2 W; GSM 1800/1900: 1 W; WCDMA: 0.25 W
Wi-Fi	Frequency	2.4 GHz and 5 GHz
Wi-Fi	Range	>=100 m in an open environment
Wi-Fi	Data rate	11 / 54 / 150 Mbps
Wi-Fi	Standard	IEEE 802.11b/g/n

Power and Interfaces

Category	Item	Specification
Power	Main unit consumption	<=4.5 W
Power	Input voltage	DC 8-36 V adaptive input with overload, undervoltage, short-circuit and reverse-polarity protection; scheduled and delayed shutdown supported
Power	Maximum consumption	<=32 W
Power	Typical consumption	<=18 W
Power	+12 V output	12 V at 1 A
Power	+5 V output	5 V at 1 A
Alarm input	Inputs	6 I/O inputs with alarm linkage
Alarm output	Outputs	2 switch outputs for audible/visual alarm, fuel cut-off, power cut-off and other linkage
Communication	RS232	1 channel; supports station announcer, fuel sensor, LED display and other

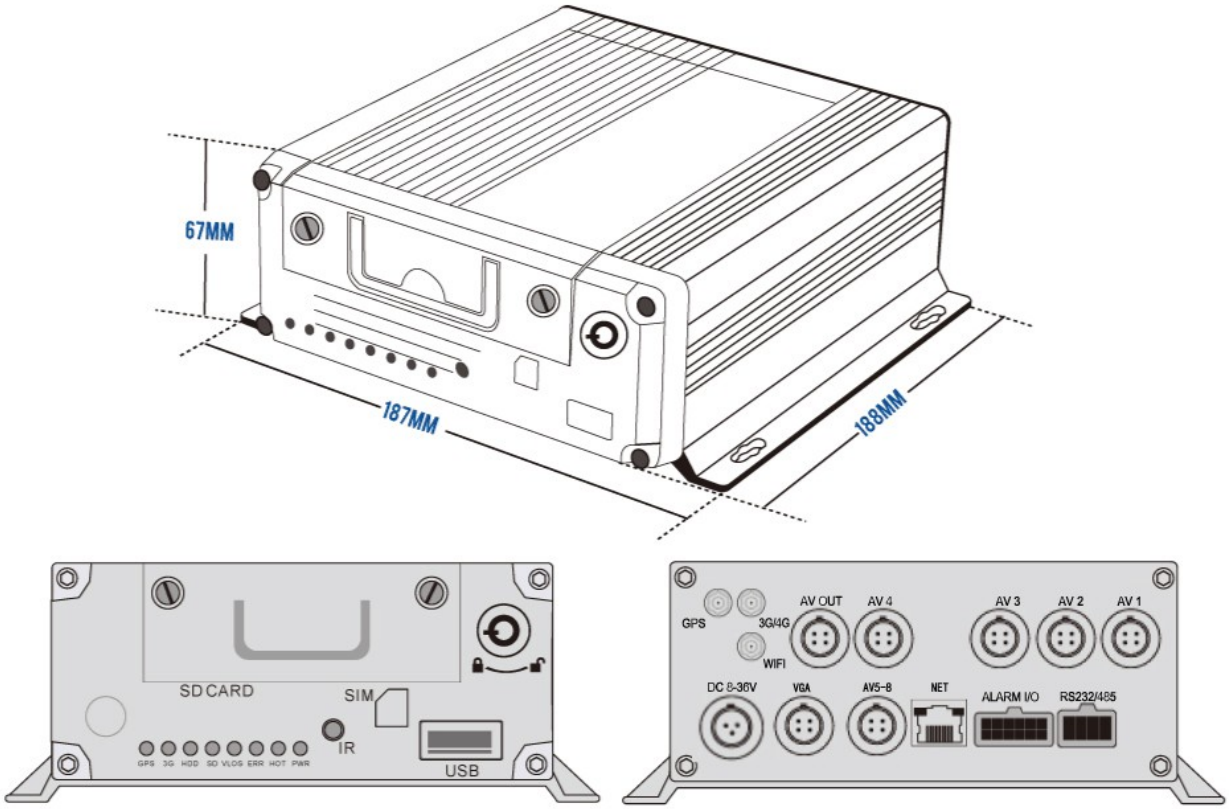
Category	Item	Specification
		peripherals
Communication	RS485	1 channel; supports PTZ expansion

Storage Environment and Mechanical Data

Category	Item	Specification
Storage	SD card	1 high-capacity SD card; up to 128 GB; backup and compensating recording supported
Storage	Upgrade methods	USB flash drive, SD card and OTA remote automatic upgrade
Storage	HDD	Optional mechanical HDD up to 2 TB
Storage	File system	Dedicated vehicle file system
USB	Interface	1 USB port for upgrade and data backup
Environment	Operating temperature	-30 C to +70 C
Environment	Relative humidity	5%-95%
Security	Password access	Two-level user and administrator password management
Mechanical	Dimensions	187 x 67 x 188 mm
Mechanical	Weight	Approximately 2.5 kg

Mechanical Drawing and Interface Layout

The drawing below shows the enclosure dimensions and the front and rear interface arrangement. Confirm the selected harness and optional interfaces before installation.



MDR820X enclosure dimensions and front/rear interface layout

Installation Notes

- Use the supplied vehicle power harness and verify polarity before applying power.
- Select a mounting location with adequate ventilation and secure the recorder against vibration.
- Use compatible aviation-connector cameras and accessories for the selected configuration.
- Confirm network frequency bands, SIM card settings and platform parameters for the destination country before deployment.