

rd1418 Reference Device

Technical Data Sheet

Platform Context

The rd1418 reference edge device forms the hardware foundation of the Road Devil vehicle intelligence platform. The device combines multi-channel video capture, embedded AI processing, edge data analysis and integration-ready telemetry outputs within a single controlled architecture.

The rd1418 has been engineered as a modular hardware platform supporting expansion modules, third-party integrations and scalable deployment across commercial vehicle fleets.

This document provides the technical specification of the rd1418 hardware platform and its modular architecture.

PARAMETER	SPECIFICATION
Device	rd1418 Forward-Facing AI Camera
Connectivity	4G LTE Cat 6 + Wi-Fi + BLE 5.1
AI Capabilities	rdDMS (driver monitoring) + rdADAS (advanced driver assistance capabilities — firmware release planned)
Camera Channels	Main + 2 external channels (expandable to 6 cameras via rdHub expansion module)
Storage	128GB internal (expandable to 2TB via rdHub)
Processor	Qualcomm 64-bit ARM Cortex, 8-core
Operating Temp.	-35°C to +75°C
Dimensions	127.5 x 72 x 43.8 mm / ~130g
Accreditations	CE, E9, FCC, IC, RCM, PTCRB

Document Classification: Technical Specification | For engineering and technical review

Includes: device architecture, firmware scope, camera capabilities, deployment options, and specifications

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1. Device Overview

The rd1418 is a 4G-connected, forward-facing vehicle camera engineered from the ground up by Road Devil. Housed in a composite casing rated for extreme temperatures, it delivers AI-powered behavioural intelligence, real-time incident detection, and connected fleet management in a compact, tamperproof unit.

IP Ownership

Road Devil holds full IP for all current and future hardware designs, mouldings, international accreditations, firmware, software source code, and rdADAS/rdDMS algorithms. This enables manufacturing outside of China and the Far East where appropriate.

Physical Design

FEATURE	DETAIL
Casing	Composite material, extreme temperature rated (-35°C to +75°C)
Compliance	UK VOSA Regulation 30 — Zones A & B windscreen clearance
Tamperproof	Protected lens design prevents tampering, damage, or covering
Wiring	Integral hard wiring — cannot be unwittingly unplugged
Dimensions	127.5 x 72 x 43.8 mm / ~130g
Mount	3M adhesive tape, windshield installation

2. Modular Architecture

The rd1418 is a modular, scalable system. A single unit handles up to 3 cameras. With the rdHub expansion, it scales to 6 cameras and 2TB storage.

MODULE	FUNCTION	KEY SPECS
rd1418	Forward-facing AI camera (core unit)	Main + 2x 1080p channels 128GB 4G Embedded AI
rdHub	Expansion module	Up to 6x 1080p cameras Up to 2TB (HDD/SSD) In-cab monitor integration 125 x 85 x 30mm
rdDriver ID	Driver identification	RFID card reader Hardwired to rd1418 55 x 85mm
rdDMS Camera	Driver monitoring camera	1080p smoke-screened Driver-facing Enables full AI suite

3. Camera Capabilities

The rd1418 delivers two categories of intelligence: incident response (FNOL) and risk prevention (FNOR through Smart AI).

FNOL — First Notification of Loss

CAPABILITY	DESCRIPTION
Harsh Event Upload	Auto-uploads video + telemetry to server when trigger levels exceeded. No vehicle recall needed.
File Transmission	Upload video files to server via IP network.
Email Notification	Instant alerts with vehicle, video, axis, location, and date info sent to fleet manager.
Live View	Real-time viewing across 3 channels for situational assessment.
Video Playback	Search and locate footage by location and date stamp.
Remote Download	Download evidence via portal or directly from the rd1418 on-site.

FNOR through Smart AI

FNOR — proactive risk notification generated through behavioural AI detection.

rdDMS — Driver Monitoring System

MODULE	FUNCTION
DFW	Driver Fatigue — eyes closed and yawning detection
ICD	In-Cab Distraction — distraction event identification
MPU	Mobile Phone Usage — phone use detection while driving
ICS	In-Cab Smoking — smoking behaviour identification

rdADAS — Advanced Driver Assistance System (Firmware Release Planned)

MODULE	FUNCTION
FCW	Forward Collision Warning — real-time collision risk detection and alert
Tailgating	Detects unsafe following distance and alerts driver

All rdDMS algorithms are proprietary and embedded as standard on rd1418 firmware. rdADAS capabilities are in development and will be delivered via firmware update.

Smart AI — MOIS / BSIS Integration

SYSTEM	FUNCTION
MOIS	Moving Off Information System — integrates with third-party MOIS for pedestrian/cyclist front proximity detection. Records via rdHub.
BSIS	Safe Proximity System — integrates with third-party BSIS for pedestrian/cyclist side and rear detection via AI camera + radar. Records via rdHub.

MOIS and BSIS are not currently delivered by Road Devil. The rd1418 supports integration with compliant third-party systems.

4. Vehicle Configurations

The rd1418 modular system supports multiple vehicle types and fleet configurations:

VEHICLE TYPE	CAMERAS	SETUP	rdHub REQUIRED
LCV (Van)	3	rd1418 + 2x BSIS Side	No
Rigid	4	rd1418 + 2x BSIS Side + Reverse	No
HGV	5	rd1418 + rdDMS + 2x BSIS + Reverse	Yes
Coach	6	rd1418 + rdDMS + 2x BSIS + Reverse + Dome	Yes
Specialist	6+	Full suite + BSIS Radar Sensors	Yes

5. Storage Matrix

Available footage by configuration (approximated, based on 8-hour working day):

CAMERAS	128 GB	1 TB	2 TB	HOURS	8-HR DAYS
1	✓			87	11
2	✓			43	5
2		✓		353	44
3	✓			28	4
3		✓		235	29
3			✓	471	59
4		✓		176	22
4			✓	353	44
5		✓		140	18
5			✓	282	35
6		✓		117	15
6			✓	235	29

6. USP Summary

USP	DETAIL
IP Ownership	Full ownership of hardware, firmware, and software
UK Engineering & Support	Direct engineering communication and time-zone alignment for European and global partners
Scalable Hardware	Competes with traditional MDVR market
Scalable Storage	Internal 128GB, expandable to 2TB via rdHub
Integration	JT Protocol support, plug-and-play platform integration
Pricing	Cost-effective and attractive price models for partnerships
Edge Computing	Open VMware environment for third-party edge development
Data Processing	BT/WiFi data processing of onboard third-party products
Flexible Manufacturing Capability	Production capability across multiple regions supporting supply-chain resilience and partner-aligned manufacturing

7. Full Technical Specification

LTE

PARAMETER	VALUE
Operating Band	LTE CAT6: FDD B1/B2/B3/B4/B5/B7/B8/B20/B28 TDD B38/B40/B41 WCDMA B1/B2/B4/B5/B8
Data (Cat 6)	FDD: DL 300 / UL 50 Mbps TDD: DL 265 / UL 35 Mbps
Data (Cat 4)	FDD: DL 150 / UL 50 Mbps TDD: DL 130 / UL 30 Mbps

Device Hardware

PARAMETER	VALUE
Processor	Qualcomm 64-bit ARM Cortex, 4x Kryo 260 @ 2.0 GHz + 4x Kryo 260 @ 1.8 GHz
Modem DSP	Hexagon DSP, Dual-HVX at 1.0 GHz
GPU	Qualcomm Kryo 610 @ 950 MHz
RAM	2 GB
Storage	128 GB (expandable to 2TB via rdHub)
Operating Voltage	9V to 36V DC
Battery Backup	Li-ion, 1100 mAh
Weight	~130 g
Dimensions	127.5 x 72 x 43.8 mm
Operating Temp.	-35°C to +75°C
Storage Temp.	-40°C to +85°C

Connectivity & Interface

PARAMETER	VALUE
GNSS	GPS / BDS / GLONASS / Galileo / NavIC / QZSS / SBAS
Bluetooth	2.1 EDR / 3.0 HS / 4.2 LE / 5.1 LE @ 2.4 GHz
Wi-Fi	802.11 a/b/g/n/ac/ax-ready @ 2.4 GHz
USB	Mini — Debug and Data Transmission
SIM Card	Nano
Cellular Antenna	Internal
GNSS Antenna	Internal
Wi-Fi / BT Antenna	Internal
IMU	3-Axis Accelerometer + 3-Axis Gyroscope
LED	POWER / CEL / DATA UPLOAD / GNSS
Panic Button	SOS Alarm (multifunction)
Reset Button	Supported
Network Protocol	TCP
Device Comms	Multiple device communication protocol channels

Recording

PARAMETER	VALUE
Image Sensor	2M Sony FHD Starvis
Lens	DFOV > 140°
Resolution	1920 x 1080P
Video Format	H.265
Audio	Built-in microphone + speaker (enable/disable)
Channels	Main + 2 external
File Transmission	Upload videos to file server via IP network
Live Streaming	3 channels
Event Recording	Auto crop + upload on trigger detection
Smart Storage	Loop overwrite, configurable allocation
Parking Mode	Impact / bump detection
Smart AI (rdDMS)	Eyes closed, yawning, distraction, smoking, phone use
Smart AI (rdADAS)	Forward collision warning, tailgating (firmware release planned)
Telematics	Live tracking, geo-fence, speeding, driver behaviour
Updates	OTA and local maintenance
Battery Protection	Over-discharge cut-off

8. Accreditations & IP

Accreditations: CE | E9 | FCC | IC | RCM | PTCRB

Road Devil holds full intellectual property ownership across all hardware designs, mouldings, accreditations, firmware source code, software source code, and rdADAS/rdDMS AI algorithms. Manufacturing capability exists outside the Far East.

Contact

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