CANedge3: 2x CAN Bus Data Logger (SD + 3G/4G + GPS/IMU)

General

- Functionality: Standalone CAN bus data logger featuring an SD card, dual CAN/LIN channels, 3G/4G LTE, and GNSS/IMU capabilities.
- Firmware: Supports free updates to add new features over time.
- Configuration: Uses configuration files based on the widely-used open source JSON schema.
- Software:
- Free, open-source editor tool for easy offline and online device configuration
- CANcloud telematics platform for browser-based management of devices and data
- Several tools for mounting S3 server as a local drive
- asammdf software & API for editing, DBC conversion, and plotting MF4 data
- MF4 converters for converting log files (drag & drop to formats like CSV, ASC, TRC)
- Python API for automated data processing, reporting, and integrations
- Telematics dashboards for browser-based visualization of decoded DBC data

Safety: Certified: CE-RED, FCC, IC, RoHS, ECE R10 (automotive EMC), RCM, ICASA, KC

Warranty: 1-year warranty

Support: Free, fast, and high-quality support

Origin: Denmark

CAN Bus

- Channels: 2 CAN channels, including support for CAN FD
- Standard: ISO 11898, supporting CAN (up to 1 Mbit/s) and CAN FD (up to 5 Mbit/s)
- Protocols: Logs raw data from protocols such as J1939/FMS, CANopen, NMEA 2000, OBD2, CAN FD, UDS, etc.
- Identifiers: Supports 2.0A (11-Bit ID) and 2.0B (29-Bit ID) CAN specifications
- Bit-Rate: Can be auto-detected or set manually
- Retransmission: Frames that lose arbitration or are disturbed by errors can be retransmitted
- Transceiver Protection: ±16 kV HBM ESD, ±15 kV IEC ESD, ±70 V bus fault, short circuit, ±30 V common mode input, TXD dominant timeout

LIN Bus

- Channels: 2 LIN channels
- Publisher/Subscriber: Each channel configurable as subscriber/publisher with LIN data transmission support
- Frame Length: Customizable frame lengths
- Standard: LIN 2.0 compliant, up to 20 Kbit/s (supports Classic & Enhanced checksum)
- Transceiver Protection: ±8 kV HBM ESD, ±1.5 kV CDM, ±58 V bus fault, TXD dominant timeout

Data Logging

- SD Card: 8 GB Class 10 industrial micro SD (optional 32GB), reads at 80 MB/s
- Parallel Logging: Simultaneous recording from 2 CAN and 2 LIN channels
- Real-Time Clock (RTC): Frames are date- and timestamped with 50 µs resolution, adjustable to time zones, and can auto-sync via LTE or CAN
- Log File Format: Industry-standard binary MF4, convertible to CSV, ASC, pandas, MATLAB, etc.
- Data Compression: Embedded, configurable (50-80% file size reduction)

- Silent Mode: Configurable for restricted (acknowledge only) or monitoring (zero transmission)
- Filters: 128/64 regular/extended ID filters per channel
- Prescaling: CAN frames can be recorded based on time or data changes
- Transmit: Lists of CAN frames per channel for single-shot or periodic requests (e.g., OBD2/UDS/XCP)
- Gateway Routing: Data from CAN, LIN, and GPS/IMU can be routed onto CAN with optional ID re-mapping
- Error Frames: Logs CAN and LIN error frames; supports remote CAN frames (RTR)
- Cyclic Logging: Oldest file deleted when SD card full (optional)
- Advanced Triggers: Custom CAN IDs & data thresholds can start/stop logging
- Heartbeat: Optionally transmits device status, storage used, and RTC time
- File Split: Log file split by size (1-512 MB) or time period (up to 86,400 s)
- Power Safe: 100% power safe—no file corruption on disconnect
- Unique Device ID: Ensures unique log file names
- Data Encryption: Log files can be encrypted for GDPR/CCPA compliance, including integrity checks

3G/4G LTE

- SIM Slot: Supports external micro SIM cards
- SIM Card: Use your own SIM or the included 'Super SIM' (90% discount rates); Verizon SIMs not supported
- Module: Uses u-blox LARA-R6001D LTE Cat1 (professional grade)
- Coverage: Global
- Frequency Support:
- 4G LTE FDD: Bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28
- 4G LTE TDD: Bands 38, 39, 40, 41
- 3G: Bands 1, 2, 5, 8
- Frequencies: LTE FDD 700-2600 MHz, TDD 1900-2600 MHz, 3G 850-2100 MHz

Certifications: CANedge3: PTCRB (antenna >20 cm from device), AT&T

Protocol: HTTP/HTTPS for stable, secure telematics data transfer

Over-The-Air: Supports configuration and firmware updates (COTA/FOTA); adjustable sync rates

Heartbeat: Device status file upload (optional)

Data Upload: Upload of log files can be enabled/disabled as needed

Antenna: External SMA, extendable or replaceable with other antennas

S3 Server: Upload data to public cloud or self-hosted servers

3G/4G LTE Security

- HTTPS: Secure data and OTA updates via TLS 1.2
- Credential Encryption: Encrypt S3 server credentials on the device SD card
- Signed Firmware: Ensures updates are from a trusted source
- User Policies: Customizable access rights for devices and users via S3 policies

GNSS & 3D IMU

- Module: u-blox NEO-M9V (92 channels) with built-in gyroscope and accelerometer
- GNSS Support: GPS, Galileo, BeiDou, GLONASS
- Sensor Fusion (UDR): Combines GNSS and IMU for enhanced accuracy (up to 3x better than GNSS alone)
- Accuracy: Position: 2.0 m CEP; Heading: 0.3°, Pitch: 0.4°, Roll: 0.6° (at 30 m/s, 68%); Velocity: 0.08 m/s
- Sensitivity: Tracking/Navigation: 160 dBm; Cold start: 148 dBm
- Acquisition: Cold start: ~30–120 seconds
- GNSS Antenna: Required for GNSS data, not for IMU

Data Parameters

- GNSS/IMU data is encoded as CAN messages within log files on a separate channel
- Messages can be filtered/prescaled for custom inclusion and frequency
- Signals include:
- GNSS position, time, status, speed, altitude, attitude/orientation, odometer, 3D IMU acceleration, geofence status

Electrical

- Input Supply: +7V to +32V DC via Channel 1 DB9 (e.g., vehicle power)
- Power Consumption: ~1 W (normal), ~2.5 W (3G/4G transfer)
- Protection: Reverse voltage and transient voltage protection

Mechanical

- Enclosure & Weight: Compact aluminum, 75 x 47 x 20 mm (excluding flanges and antenna), 100 grams
- Antennas: 3G/4G LTE and GPS antennas included

- Flanges: 4 x M3 screw holes
- Connector: 2 x Standard D-sub 9 (DB9), optional adapters
- Pin-Out: See product manual for details
- Configurable Power Out: Channel 2 can supply 5V to external modules
- LEDs: Status LEDs for power, CH1, CH2, memory, LTE, GNSS
- Temperature: Operating range -25°C to +70°C
- IP Rating: IP40