



FUNCTION REFERENCE GUIDE

Complete Capability Overview — 21 Engineering Functions

DIATRONIK

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Introduction

BimmerX is a master-level BMW engineering software developed for professional diagnostic, immobiliser, programming, and ECU-repair workshops. It delivers factory-grade access to BMW modules across the E-Series, F-Series, and G-Series ranges, including the latest hybrid and electric platforms. This guide presents a detailed overview of every supported function, the technical operation behind it, and the typical service it enables.

A complete **BMW module & terminology glossary** is provided at the end of this document for reference.

Supported Functions

The following 21 functions form the core capability set of BimmerX. Each entry describes what the function does, its technical operation, and the typical service it enables in a professional workshop.

01

BDC1 / BDC2 / BDC3 New Parts Replacement

ANTI-THEFT MODULE

DESCRIPTION

Programming and commissioning of a brand-new Body Domain Controller (BDC) unit into a vehicle. Supports all three BDC generations (BDC1, BDC2, BDC3) used across the BMW F-Series and G-Series ranges.

TECHNICAL DETAIL

Performs full module initialization including VIN coding, CAFD/SWE assignment, key learning, and synchronization with the DME/DDE, EGS, and gateway modules. Equivalent to a factory commissioning procedure.

USE CASE

Required after a stolen vehicle recovery, BDC failure, or full immobiliser replacement. Restores full vehicle functionality with a virgin module.

02

BDC1 / BDC2 Unlock

MODULE RECOVERY

DESCRIPTION

Unlocks a locked Body Domain Controller, returning it to a writable state so it can be re-flashed, re-coded, or paired to another vehicle.

TECHNICAL DETAIL

A locked BDC will refuse all programming attempts (UDS write services blocked). This function clears the protection layer and restores full diagnostic write access to the module.

USE CASE

Essential for re-using second-hand BDC units, recovering modules after a failed programming session, or preparing BDCs for the used-parts market.

03**BDC2 + Key — Full ISN & EWS6 Extraction***IMMOBILISER***DESCRIPTION**

Extracts the complete Individual Serial Number (ISN) and the EWS6 immobiliser data set from a BDC2 module using a valid working key.

TECHNICAL DETAIL

EWS6 is the immobiliser protocol used on BDC2-equipped vehicles. The full ISN is the secret code that synchronises the engine ECU (DME/DDE) with the immobiliser, and is mandatory for key cutting and DME pairing.

USE CASE

Enables all-key-lost recovery, additional key programming, and DME/DDE replacement on F-Series and early G-Series vehicles.

04**EGS 5 / 6 / 7 Refresh & Synchronization***TRANSMISSION***DESCRIPTION**

Virginises and resynchronises automatic transmission control units of generations EGS5, EGS6, and EGS7.

TECHNICAL DETAIL

A used EGS retains its original VIN and adaptation data. The refresh function returns the TCU to its factory state, after which it can be paired to a new chassis and synchronised with the DME via CAN.

USE CASE

Critical for the used-parts market, gearbox swaps, and post-repair commissioning. Eliminates the need to purchase a brand-new EGS unit.

05**BDC1 ELV Cancel***STEERING LOCK***DESCRIPTION**

Software-side cancellation of the Electronic Steering Lock (ELV) on BDC1-equipped vehicles.

TECHNICAL DETAIL

Deactivates the ELV function at the BDC level, preventing the system from sending lock/unlock commands. The mechanical steering lock is bypassed without physical removal.

USE CASE

ELV failure is one of the most common BMW faults — the column locks and prevents starting. This function avoids costly steering-column replacement and re-coding procedures.

06**DME / DDE — All Special Functions & Write Refresh***ENGINE ECU***DESCRIPTION**

Full virginisation and special-function support for petrol (DME) and diesel (DDE) engine control units across all BMW generations.

TECHNICAL DETAIL

Resets the ECU's internal VIN, ISN, EWS signature, and adaptation memory to a virgin state. Supports advanced write operations not available in standard diagnostic tools.

USE CASE

Essential for engine swaps, ECU replacement, and used-ECU commissioning. Allows a DME/DDE to be married to a new chassis without dealer intervention.

07**IMMO-OFF — B48 / B58 / 8X0 Family***IMMOBILISER REMOVAL***DESCRIPTION**

Software-side immobiliser deactivation for the modern B48 (4-cyl petrol), B58 (6-cyl petrol), and 8X0-series Bosch DMEs.

TECHNICAL DETAIL

Disables the immobiliser routine inside the engine ECU firmware. The ECU will start and run without authentication from the BDC or any immobiliser module.

USE CASE

Used for permanent BDC failures, engine test benches, race / off-road builds, and emergency recovery situations where the immobiliser module is unavailable.

08**B48 / B58 / 8X0 — P-FLASH Read & Write***ECU PROGRAMMING***DESCRIPTION**

Full Program Flash (P-FLASH) read and write access on the latest generation Bosch DMEs (MEVD17.2.8, MG1, MD1 platforms).

TECHNICAL DETAIL

These ECUs are protected by TPROT and bootloader-level security. The software bypasses these protections to allow firmware reading, modification, and writing — the foundation for Stage 1 tuning, ECU repair, and virginisation.

USE CASE

Required for performance tuning, ECU repair, firmware backup, and cloning operations on modern BMW petrol engines.

09**B48 / B58 / 8X0 — Read ISN by OBD***IMMOBILISER***DESCRIPTION**

Direct reading of the Individual Serial Number (ISN) from B48 and B58 engine ECUs through the OBD-II port — no bench, no BDM, no ECU removal.

TECHNICAL DETAIL

On most generations, ISN extraction from these protected ECUs requires opening the unit and using BDM or bench-mode tooling. BimmerX performs this operation entirely through the diagnostic port.

USE CASE

Dramatically reduces labour time for key programming, DME pairing, and all-key-lost situations on modern BMWs. One of the flagship features of BimmerX.

10**EDME i3 — ISN Reading (All Versions)***ELECTRIC VEHICLE***DESCRIPTION**

ISN extraction support for the BMW i3 electric vehicle across all EDME (Electric Drive Motor Electronics) revisions.

TECHNICAL DETAIL

The EDME on the i3 acts as the propulsion controller and stores the ISN required for high-voltage system authorisation. Very few aftermarket tools support this module.

USE CASE

A premium niche service — i3 key programming, EDME replacement, and high-voltage controller repair.

11**Mercedes-Benz Infineon TC1797 / TC1793 — OTP Calculation***CROSS-BRAND (MERCEDES)***DESCRIPTION**

OTP (One-Time Programmable) protection calculation and bypass for Mercedes-Benz ECUs based on the Infineon Tricore TC1797 and TC1793 platforms. Enables full ECU cloning.

TECHNICAL DETAIL

Mercedes uses Tricore-based ECUs with One-Time-Programmable security regions that normally prevent any modification. BimmerX computes the correct OTP values to allow arbitrary cloning of these units.

USE CASE

Extends the workshop's capability into the Mercedes ECU repair, replacement, and cloning market — a strong cross-brand revenue stream.

12**BMW Internal Parts Number Query (ETK)***DATABASE***DESCRIPTION**

Built-in BMW parts catalogue (ETK) lookup. Identify any BMW component by its internal part number directly inside the software.

TECHNICAL DETAIL

Returns the part description and metadata associated with a BMW reference number. Note: this is a parts catalogue lookup only — it does not return vehicle / model compatibility data.

USE CASE

Streamlines workshop workflow when sourcing modules, ordering parts, or verifying component identity before programming.

13**BMW Module Initialisation BIN Files***MODULE RECOVERY***DESCRIPTION**

Complete library of factory-state initialisation BIN files for all BMW modules. Restores any module to a clean virgin state.

TECHNICAL DETAIL

Re-injecting a clean initialisation BIN resolves the 'Time Part Protection' error — a synchronisation lock that occurs when modules detect mismatched time-domain signatures between each other.

USE CASE

Recovery tool for bricked or mis-programmed modules. Essential for the used-parts market where modules must be cleanly virginised before resale.

14**Siemens MSV / MSD — ISN Conversion***ENGINE ECU***DESCRIPTION**

ISN calculation and conversion for the Siemens MSV (MSV70, MSV80) and MSD (MSD80, MSD81, MSD85, MSD87) engine ECUs found on E-Series and early F-Series BMWs.

TECHNICAL DETAIL

These ECUs store the ISN in a proprietary encoded format. BimmerX decodes the stored value and converts it for use in CAS pairing, key programming, and DME replacement procedures.

USE CASE

Daily workshop service for E60, E90, E70, E71, E82 and similar generations — still a very large pool of vehicles on the road.

15**DME / DDE Files — ISN / EWS / EGS / EME Double-Stealth Code Viewer***FILE ANALYSIS***DESCRIPTION**

Reveals all hidden security codes inside any BMW DME/DDE firmware file: ISN, EWS signature, EGS signature, and EME (Electric Machine) code, including the Double Stealth Code protection used on recent ECUs.

TECHNICAL DETAIL

The Double Stealth Code is an additional encryption layer applied to the ISN/EWS data in modern firmware. The software decodes both protection layers and displays the underlying secret values.

USE CASE

Critical for ECU file repair, cloning, virginisation, and chip-tuning workflows on modern BMW platforms.

16**Instrument Cluster — NCD Coding Function***INSTRUMENT CLUSTER***DESCRIPTION**

Manages the NCD (Newer Coding Data) file structure for the BMW Instrument Cluster (IC), enabling full coding control over the meter unit.

TECHNICAL DETAIL

NCD files are the modern coding format used by E-Sys on F-Series and G-Series vehicles. The software allows reading, modifying, and writing the IC's NCD directly.

USE CASE

Used for instrument cluster replacement, language and unit changes, feature retrofitting, and post-repair recalibration after legitimate mileage corrections.

17**FEME Refresh (Beta — Multiple BAF Modes)***ELECTRIC / HYBRID***DESCRIPTION**

Refresh and virginisation of the Front Electric Machine Electronics (FEME) controller on hybrid and electric BMW vehicles. Multiple BAF write modes available for compatibility.

TECHNICAL DETAIL

Currently in beta — success rate is not guaranteed at 100%. Several BAF (algorithm) modes are provided to maximise compatibility across FEME revisions.

USE CASE

Niche premium service for BMW hybrid and EV platforms. Always perform a full backup before attempting on customer vehicles.

18**DKG02 (Beta)***TRANSMISSION***DESCRIPTION**

Refresh and programming of the DKG02 dual-clutch transmission found on BMW M-Sport models (M2 / M3 / M4 and related).

TECHNICAL DETAIL

Beta-stage support — does not guarantee 100% success rate. Targets the M-DCT generation 02 transmission control unit.

USE CASE

High-value niche service. Required for DKG replacement, used-gearbox commissioning, and BMW M Series repair workflows.

19**Gateway (GW) — Write Configuration & Basic Level Functions***GATEWAY / NETWORK***DESCRIPTION**

Read and write access to the BMW central gateway (ZGW) configuration, including a broad set of low-level write functions.

TECHNICAL DETAIL

The gateway routes traffic across all vehicle networks (CAN, FlexRay, Ethernet). Incorrect configuration will prevent the vehicle from operating. BimmerX exposes a wide range of GW operations — far more than mainstream tools.

USE CASE

Required for full vehicle reprogramming, network repair, gateway replacement, and advanced retrofitting procedures.

20**Engineering Modes — Anti-Theft & Version Tree Programming***ENGINEERING***DESCRIPTION**

Access to BMW factory-level engineering modes for selective programming of anti-theft modules, with management of separate firmware version trees.

TECHNICAL DETAIL

Engineering mode unlocks operations normally blocked in standard diagnostics. The separate version-tree handling allows the technician to operate across multiple I-Level branches for the same chassis.

USE CASE

Used by advanced technicians for complex programming scenarios, custom retrofits, and vehicles that have been partially updated across multiple firmware branches.

21**G-Series EME — ISN Certification & Cross-Vehicle Exchange***ELECTRIC / HYBRID (G-SERIES)***DESCRIPTION**

ISN-certified exchange of EME (Electric Machine Electronics) modules between G-Series vehicles, with a built-in test refresh mode to validate the operation before final commitment.

TECHNICAL DETAIL

Allows a used EME module from one G-Series vehicle to be paired into another via certified ISN exchange. The test-refresh mode lets the technician verify the procedure before committing the changes permanently.

USE CASE

High-value service for the modern BMW used-parts market — specifically G-Series hybrid and electric platforms (post-2018), where few aftermarket tools currently operate.

BMW Module & Terminology Glossary

Reference list of the BMW acronyms and modules used throughout this document.

BDC	Body Domain Controller — central body / immobiliser module on F-Series and G-Series. Generations: BDC1, BDC2, BDC3.
FEM	Front Electronic Module — predecessor of the BDC on early F-Series vehicles.
CAS	Car Access System — immobiliser module on E-Series and early F-Series.
EWS	Electronic Immobiliser — legacy anti-theft system (E36/E39/E46/E53). EWS6 is the modern protocol used on BDC.
DME	Digital Motor Electronics — engine ECU for petrol engines.
DDE	Digital Diesel Electronics — engine ECU for diesel engines.
ISN	Individual Serial Number — secret code that pairs the engine ECU with the immobiliser. Required for all key & ECU operations.
EGS	Elektronische Getriebe Steuerung — automatic transmission control unit. Generations: EGS5, EGS6, EGS7.
DKG	Doppelkupplungsgetriebe — dual-clutch transmission (M-DCT).
EME	Electric Machine Electronics — electric powertrain controller on G-Series hybrid / EV.
EDME	Electric Drive Motor Electronics — main propulsion controller on the BMW i3.
ELV	Electronic Steering Lock — column locking mechanism, software-controlled.
P-FLASH	Program Flash — the program memory region of the ECU.
D-FLASH	Data Flash — the data memory region of the ECU.
NCD	Newer Coding Data — modern BMW coding file format used by E-Sys.
ZGW / GW	Central Gateway — module routing communication across CAN, FlexRay and Ethernet.
B48 / B58	Modern BMW petrol engines — 4-cyl (B48) and 6-cyl (B58).
8X0	Bosch ECU family used on the latest BMW petrol engines (MEVD17, MG1, MD1 platforms).
MSV / MSD	Siemens engine ECU families (MSV70/80, MSD80/81/85/87) used on E and early F Series.

Additional Coverage

In addition to the 21 listed functions, BimmerX includes broad support for older F-Series platforms and a wide range of additional ISN reading and P-FLASH operations across the BMW range. Coverage is continuously extended through software updates.

Why BimmerX with Diatronik

Master-Level Access

Factory-grade engineering capability across BMW E, F and G Series — including the latest hybrid and electric platforms.

Flagship OBD ISN

Read the ISN on B48 / B58 directly through OBD — no bench, no ECU removal, no soldering.

Full BDC Coverage

BDC1, BDC2 and BDC3 fully supported — new parts, unlock, full ISN, EWS6, ELV cancel.

ECU Repair & Cloning

Complete DME/DDE virginisation, Siemens MSV/MSD ISN, Mercedes Tricore OTP — cross-brand revenue.

G-Series & EV Ready

EME and EDME support on BMW i3 and G-Series hybrid/EV — a fast-growing market segment.

Professional Support

Backed by Diatronik — established workshop with extensive experience in BMW and JLR programming.

Contact

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