



BINUNLOCK LLC

Automotive software for professional service work

2AB2 / 2AB6 EGS Workspace 2.0.0

English User Guide

BMW EGS ENET/ZGW identification, EEPROM-assisted VIN/ISN analysis, DTC service and guarded 2AB2/2AB6 reset.

DOCUMENT REVISION 1.0

Qualified service work only.

Read the target-control and guarded-reset chapters before sending a state-changing command.

Contents & document control

APPLICATION

2AB2 / 2AB6 EGS Workspace 2.0.0

VEHICLE INTERFACE

BMW ENET · ZGW · EGS

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DOCUMENT STATUS

This guide applies to version 2.0.0 and includes the final Windows screenshots. Replace it when the visible workflow or application version changes.

Purpose, scope and validation status

This guide covers the complete operator workflow in 2AB2 / 2AB6 EGS Workspace 2.0.0, from first activation through diagnostic records and the guarded EGS reset.

READ BEFORE VEHICLE USE

Protocol frames, parsers and error paths have passed deterministic tests and isolated UDP/TCP fixtures. A controlled comparison on physical EGS bench hardware is still pending.

What the application does

- Discovers a BMW ZGW on the local wired ENET network or accepts a known ZGW IPv4 address.
- Identifies BMW MAC, vehicle VIN, EGS VIN and available EGS software-part records such as BTLD, SWFL and HWEL.
- Analyses a supported 128–192 KiB DME/EGS EEPROM image locally for VIN and a 16-byte ISN.
- Reads and decodes normal or shadow EGS DTC against the built-in catalogue, then saves the decoded list as a text report.
- Sends confirmed normal-DTC erase, shadow-DTC erase and ECU-reset commands.
- Runs the two-confirmation 2AB2/2AB6 security-state reset using the ISN extracted from the loaded EEPROM, followed by an ECU reset.

What the application does not do

- It does not select the correct vehicle, ZGW, EGS or EEPROM on the operator's behalf.
- It does not flash BTLD/SWFL, calculate an E-Sys programming plan or replace a prepared recovery path.
- It does not upload the selected EEPROM or vehicle data to a backend.
- A transport-complete erase/reset command is not independent proof of the final ECU state; verify the result.

QUALIFIED SERVICE WORK

Use only on a vehicle or unit you own or are authorized to service. BMW service information, electrical safety rules and a qualified technician's judgement remain controlling.

Safety, target control and stop conditions

The reset functions can change the EGS security or diagnostic state. Establish the target, power, wired route and recovery plan before selecting a red action.

Before a state change	Required evidence
Authorization	A work order or other explicit permission covers the intended vehicle and EGS.
Target identity	Vehicle VIN, EGS VIN, BMW MAC, ZGW address and software identity refer to the intended unit.
EEPROM source	File origin is known; the displayed VIN and 32-character ISN have been independently checked.
Power	A regulated workshop-grade support supply can remain stable for the whole operation.
Network	A known-good wired ENET cable and IPv4 adapter are stable; sleep, VPN switching and competing diagnostic sessions are disabled.
Recovery	The correct E-Sys BTLD/SWFL recovery route and required files are ready before 2AB2/2AB6 reset.

STOP IMMEDIATELY

Stop when any VIN or software identity conflicts, the EEPROM source is uncertain, ZGW selection changes after identification, power fluctuates, ENET becomes unstable, or the recovery plan is incomplete.

- Do not switch ignition, disconnect ENET, change adapters or remove power during ECU reset or 2AB2/2AB6 reset.
- Do not run E-Sys, ISTA or another diagnostic client against the same target at the same time.
- Do not treat a closed window, timeout or inconclusive response as proof that no ECU change occurred.
- After an uncertain operation, preserve the report and exact status text, re-identify the unit and choose recovery from evidence rather than blind retries.

ATOMIC VEHICLE COMMANDS

Once a confirmed mutating frame has been sent, the application lets that short transaction finish instead of cancelling it midway. Keep the physical connection stable even if the interface appears temporarily busy.

Windows, ENET and local network requirements

Prepare the computer and wired vehicle route before launch. Ordinary diagnostic and EEPROM work is local to the Windows computer and ENET segment.

Category	Requirement	Reason
Operating system	Windows 7 SP1, 8.1, 10 or 11; 32-bit or 64-bit	The application is a 32-bit .NET Framework WinForms program.
Runtime	Microsoft .NET Framework 4.8	Required to start the application.
Display	1024 × 768 or greater; normal Windows scaling	Keeps the adaptive workspace and warnings readable.
Vehicle link	Known-good BMW ENET cable and active IPv4 Ethernet adapter	Discovery and diagnostics use the local wired BMW Ethernet network.
Power	Regulated workshop support supply	Prevents interruption during state-changing commands.
Computer	AC power; sleep and hibernation disabled	Avoids adapter loss and suspended operations.
Other tools	E-Sys, ISTA and other active diagnostic sessions closed	Prevents competing TCP sessions or consumed responses.

Local ports

Purpose	Protocol	Port	Direction
ENET/ZGW discovery and ZGW identity	UDP	6811	Local adapter broadcast or selected ZGW
EGS identification, DTC and reset commands	TCP	6801	Windows computer to selected ZGW

If Windows Firewall requests network access for discovery, allow it only on the trusted private workshop network. Do not expose the ENET segment or these ports to the public Internet.

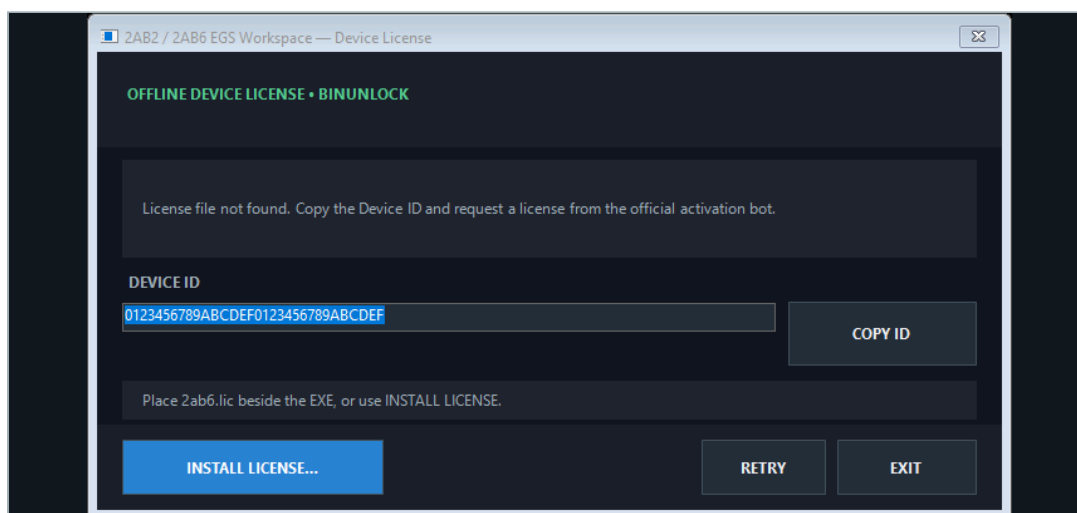
LOCAL VEHICLE TRAFFIC

The vehicle workflow has no update check, remote ECU processing or data-upload dependency. Internet access is outside the vehicle workflow and is needed only to obtain a license from the official activation service or open binunlock.com from the header icon.

Extract, start and activate

Run the application from a normal extracted folder, then install the device-bound license returned by the official activation bot.

- 1 Extract the complete official application ZIP to a normal local folder. Do not start the EXE from inside the ZIP preview.
- 2 Start `2AB2_2AB6_EGS_Workspace_2.0.0.exe` as the normal workshop user.
- 3 When Device License appears, select `COPY ID` and send the complete 32-character Device ID to the official activation bot.
- 4 Choose the issued term: 10 days, 30 days or permanent. Save the returned file without editing and keep its name `2ab6.lic`.
- 5 Select `INSTALL LICENSE...`, choose `2ab6.lic`, then select `RETRY`. A valid portable `2ab6.lic` placed beside the EXE can also be read on Retry.
- 6 Confirm the header shows `LICENSE • PERMANENT`, `LICENSE • 1 DAY LEFT` or `LICENSE • N DAYS LEFT` before starting work.



Device activation window shown with a synthetic documentation Device ID.

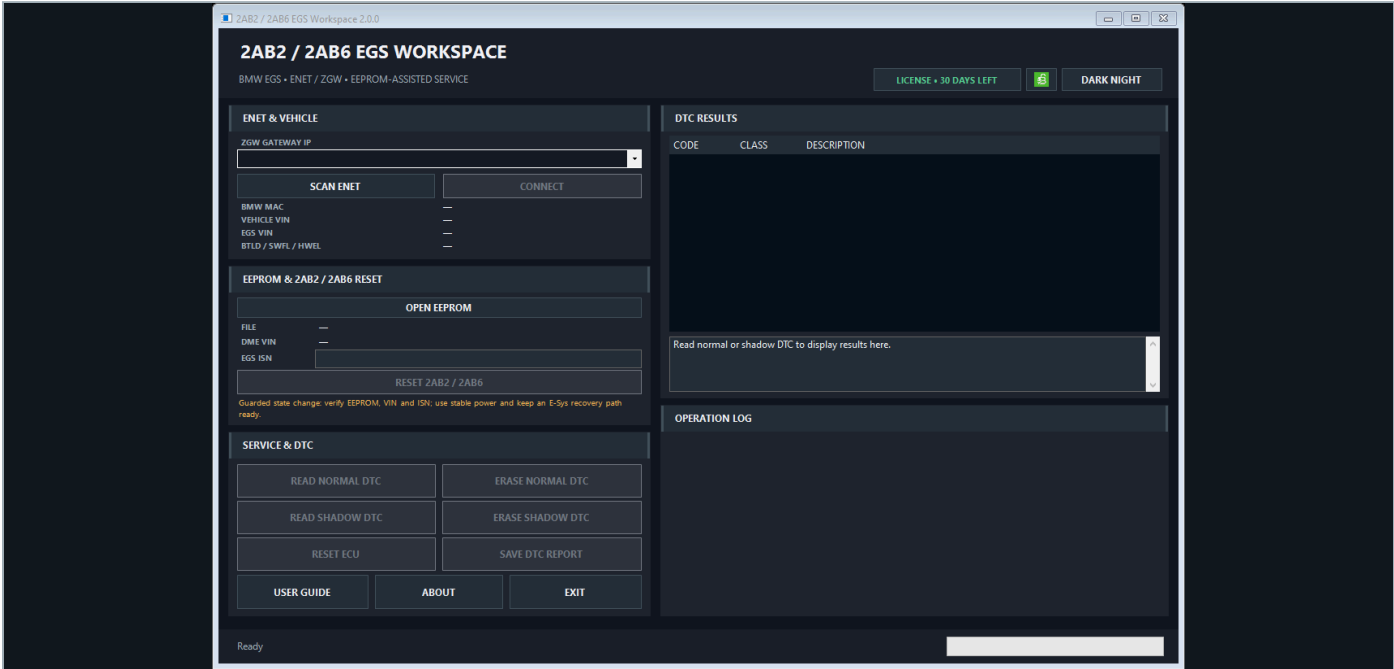
- The license is checked locally before each new operation.
- Keep Windows date, time and time zone correct. Moving the clock backwards can block a timed license.
- A hardware or virtual-machine change may produce a different Device ID.
- A portable `2ab6.lic` beside the EXE has priority. Remove an obsolete portable file before troubleshooting a newly installed license.

ACTIVATION PRIVACY

Send only the Device ID requested by the official activation bot. Do not publish or edit the received license file.

Main workspace and status model

The workspace keeps ENET identity, EEPROM analysis, service actions, decoded DTC, chronological log and operation progress visible in one window.



Main workspace in DARK NIGHT mode. DAY LIGHT changes presentation only.

Area	Meaning
ENET & VEHICLE	ZGW address, scan/connect controls and the identified BMW MAC, vehicle VIN, EGS VIN and software rows.
EEPROM & 2AB2 / 2AB6 RESET	Loaded file, DME VIN, read-only 32-character EGS ISN and the guarded reset action.
SERVICE & DTC	Normal/shadow read and erase, ECU reset, report, guide, About and Exit.
DTC RESULTS	Decoded code, class and description; selecting a row shows its full detail.
OPERATION LOG	Current-session chronology of target, progress, warnings and errors.
Bottom status bar	Current operation and percentage. Controls are disabled while a transaction is active.

- Select the green BinUnlock icon to open <https://binunlock.com> in the default browser.
- Select **DARK NIGHT** or **DAY LIGHT**, or press **Ctrl + Shift + T**, to switch theme.
- Select the license badge to view the current term, Device ID and License ID.
- Select **USER GUIDE** to open this manual.

BUTTON AVAILABILITY

DTC and ECU-reset actions become available after a successful **CONNECT**. **SAVE DTC REPORT** becomes available after a DTC read. **RESET 2AB2 / 2AB6** becomes available only after a 32-character ISN is found in an accepted EEPROM image.

Safe quick-start sequence

Use the same order on every unfamiliar unit: power and route first, identify second, read and record third, state change last.

- 1 Connect regulated support power, switch ignition on as required, connect the ENET cable and keep the computer on AC power.
- 2 Close competing diagnostic programs and disable sleep, hibernation and VPN switching.
- 3 Select **SCAN ENET**; choose the row whose full VIN matches the work order. If discovery is unavailable, enter a separately verified ZGW IPv4 address.
- 4 Select **CONNECT**. Compare BMW MAC, vehicle VIN, EGS VIN and BTLD/SWFL/HWEL information with the intended vehicle and unit.
- 5 Read normal or shadow DTC as required. Save a report before erase when it is needed for the repair record.
- 6 For 2AB2/2AB6 work, select **OPEN EEPROM**, then independently verify the displayed file, DME VIN and 32-character ISN.
- 7 Read both confirmation dialogs. Start a red action only with stable power, stable wired ENET and the appropriate recovery plan ready.
- 8 After any state change, reconnect or re-identify as needed and verify the intended result instead of relying only on a completion message.

NO SHORTCUT AROUND IDENTITY

A typed address proves only that it is syntactically valid. It does not prove vehicle ownership, VIN consistency or correct EGS selection.

Scan ENET or enter ZGW manually

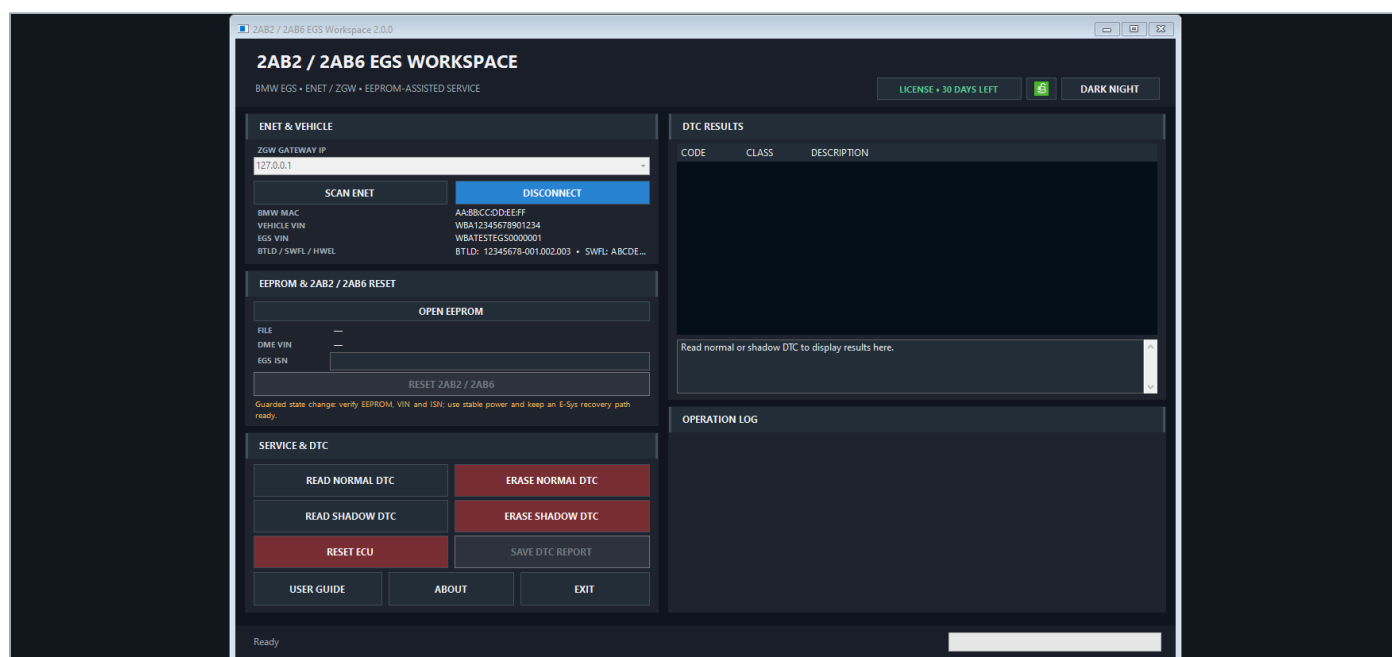
Automatic scan is preferred because each useful response can associate a ZGW peer address with a reported vehicle VIN.

Automatic discovery

- 1 Select **SCAN ENET**. The application sends the BMW discovery probe over each active local IPv4 adapter and waits briefly for a reply.
- 2 Review every result in the ZGW GATEWAY IP list. A discovered row is displayed as (peer IPv4 address) - VIN.
- 3 Select only the entry whose complete VIN matches the intended vehicle, then select **CONNECT**.
- 4 Wait until the identification stages complete and the button changes to **DISCONNECT**.

Manual ZGW address

- 1 Obtain the known ZGW IPv4 address from an independent controlled source.
- 2 Type the address in **ZGW GATEWAY IP**, using a plain IPv4 value such as 169.254.x.x with no port or spaces.
- 3 Select **CONNECT**, then verify the returned identity fields before any other action.



Connected and identified EGS using a controlled local fixture and synthetic identifiers.

ADDRESS LOCK WHILE CONNECTED

The gateway field is disabled after identification. If the target must change, select **DISCONNECT**, enter or select the new address, and identify again.

NO GATEWAY FOUND

Check ignition/wake state, ENET link LEDs, Windows IPv4 adapter state, firewall profile, VPN routes and competing tools. Do not guess a target solely to make **CONNECT** succeed.

Verify ZGW, vehicle and EGS identity

CONNECT is complete only when the ZGW responds and the EGS returns both software-part records and its VIN response.

Displayed field	Source and operator check
BMW MAC	Reported by the selected ZGW. Record it when the workshop process uses network identity.
VEHICLE VIN	Reported by the selected ZGW. It must match the work order and physical vehicle.
EGS VIN	Printable identifier from the EGS VIN response. Resolve any mismatch before service.
BTLD / SWFL / HWEL	Decoded software/hardware records returned by the EGS. Compare with the intended unit and recovery files.
ZGW GATEWAY IP	Peer selected by scan or manually entered. It remains the endpoint for EGS traffic.

- If the ZGW does not answer, the application reports a gateway identity failure.
- If software-part data is absent, the application does not treat the EGS as detected.
- If the EGS VIN request receives no data, the connection attempt fails rather than presenting a partial connection.
- Select **DISCONNECT** before moving the cable, changing vehicle, changing adapter or using another ZGW address.

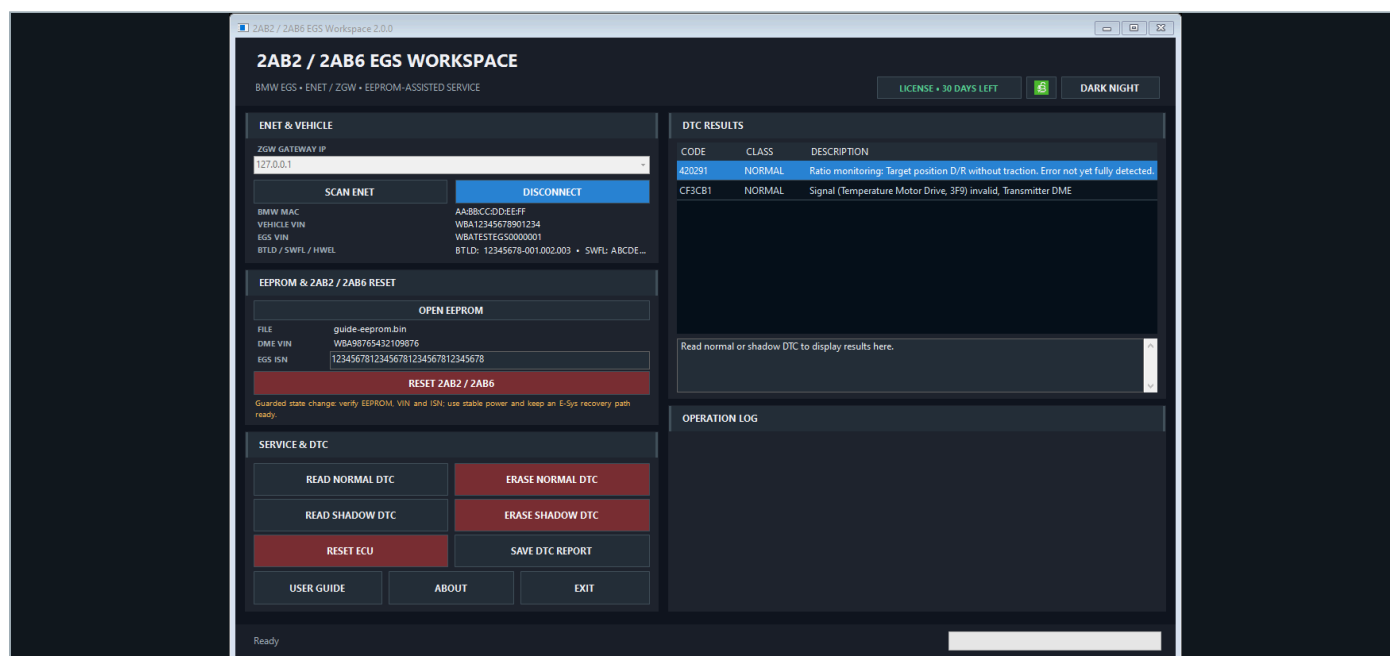
MISMATCH MEANS STOP

Do not explain away a VIN, address or software mismatch as a display issue. Recheck the physical target and network route before continuing.

Load EEPROM and verify VIN / ISN

EEPROM analysis is read-only and local. It searches a supported full image for the legacy record pattern used to derive the 16-byte ISN and for a recognizable BMW VIN.

- 1 Obtain the correct full DME/EGS EEPROM read and preserve an untouched backup.
- 2 Select **OPEN EEPROM** and choose a **.bin** or **.eep** file between 128 KiB and 192 KiB inclusive.
- 3 Wait for analysis to complete. Confirm the displayed file path refers to the selected source.
- 4 Compare **DME VIN** with the source vehicle and intended work order. The parser recognizes VINs beginning **WBA**, **LBV** or **5UX**.
- 5 Verify **EGS ISN** is exactly 32 uppercase hexadecimal characters, representing 16 bytes. Compare it with independent source evidence when available.
- 6 Proceed only when the EEPROM origin, displayed VIN and ISN are all understood and the intended EGS has already been identified.



Accepted controlled EEPROM fixture with synthetic VIN and ISN. Never use a customer dump in documentation.

Result	Meaning / next action
EEPROM accepted; ISN and VIN found	Both heuristics matched. Independent target verification is still required.
ISN found; VIN was not found	Do not rely on the file name. Establish the source and correct vehicle independently before any reset.
ISN was not found	The file does not match the supported record heuristic; do not construct or guess an ISN.
Size must be 128-192 KiB	Use the correct full supported EEPROM read; do not pad, crop or concatenate files to bypass the check.

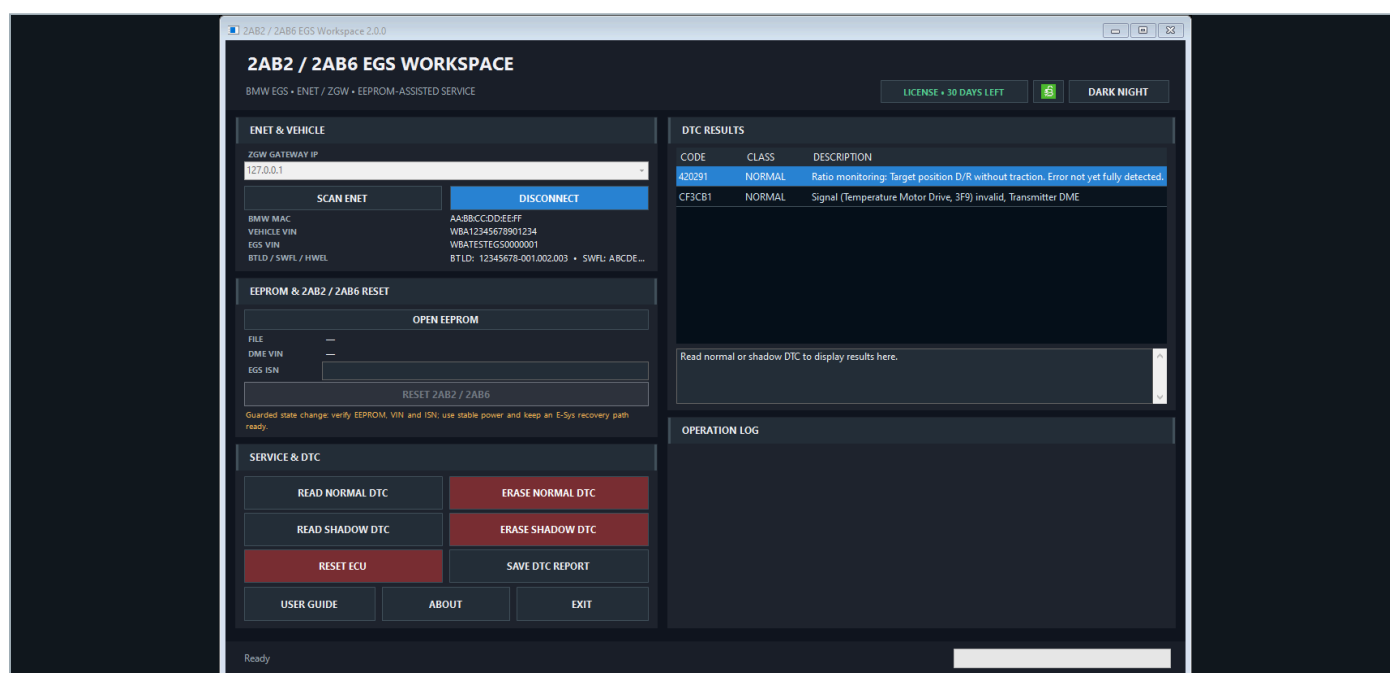
ANALYSIS DOES NOT MODIFY THE FILE

OPEN EEPROM reads the image, extracts display values and clears its in-memory byte buffer after analysis. It does not write back to the selected file.

Read normal and shadow DTC

Normal and shadow memories are separate diagnostic views. Read the class required by the repair plan and preserve the result before erase.

- 1 Connect and identify the intended EGS.
- 2 Select **READ NORMAL DTC** for the normal fault memory or **READ SHADOW DTC** for the shadow memory.
- 3 Wait until the status returns to Ready. Review **CODE**, **CLASS** and **DESCRIPTION** in **DTC RESULTS**.
- 4 Select a row to display its complete decoded text below the table.
- 5 Select **SAVE DTC REPORT**, choose a writable destination and keep the report with the work order before any erase.



Decoded DTC table from a controlled fixture with no customer VIN or network address.

Interpreting an empty result

- No matching DTC was decoded means that no six-character code in the raw reply matched the built-in catalogue.
- It is not an independent declaration that the ECU contains no fault data.
- If the diagnostic context requires certainty, compare with the approved BMW diagnostic workflow and retain the application status/log.

REPORT CONTENT

The saved text report contains the decoded catalogue rows from the most recent normal or shadow read. It does not include the complete raw ECU response, vehicle identity or operation log.

Erase DTC and reset the ECU

The three red service actions require an identified connection and an explicit confirmation. Save evidence before erasing diagnostic memory.

Action	Effect	Required follow-up
ERASE NORMAL DTC	Sends the original normal-memory clear command and clears the visible decoded list after transport completion.	Read normal DTC again and verify with the approved diagnostic process.
ERASE SHADOW DTC	Sends the original shadow-memory clear routine and clears the visible decoded list after transport completion.	Read shadow DTC again; confirm the intended class changed.
RESET ECU	Sends the original EGS reset command. The diagnostic session may close temporarily.	Allow reboot, reconnect/re-identify and verify communication and intended state.

- 1 Confirm the selected ZGW and connected identity have not changed.
- 2 Save the current DTC report when required.
- 3 Select the intended red action and read the confirmation dialog literally.
- 4 Select Yes only with stable power and wired ENET. Do not interrupt the short transaction.
- 5 After completion, re-read or re-identify the EGS to verify the result.

TRANSPORT-COMPLETE IS NOT ECU-PROOF

For compatibility with the original application, these handlers report success when the command and reply-read path complete without a transport exception; they do not independently validate a UDS positive-response byte. Always perform the stated follow-up verification.

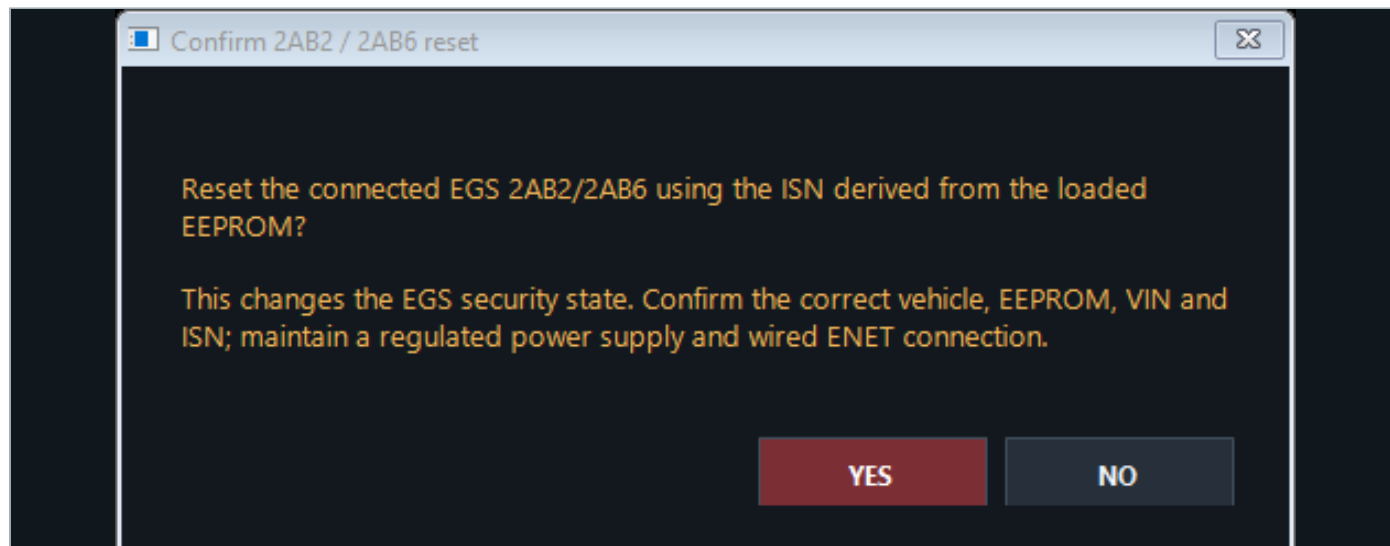
Guarded 2AB2 / 2AB6 reset

This is the highest-risk application action. It transmits the 16-byte ISN from the loaded EEPROM to the selected ZGW/EGS route, evaluates the legacy response marker, then sends an ECU reset in a second connection.

PRECONDITIONS — ALL REQUIRED

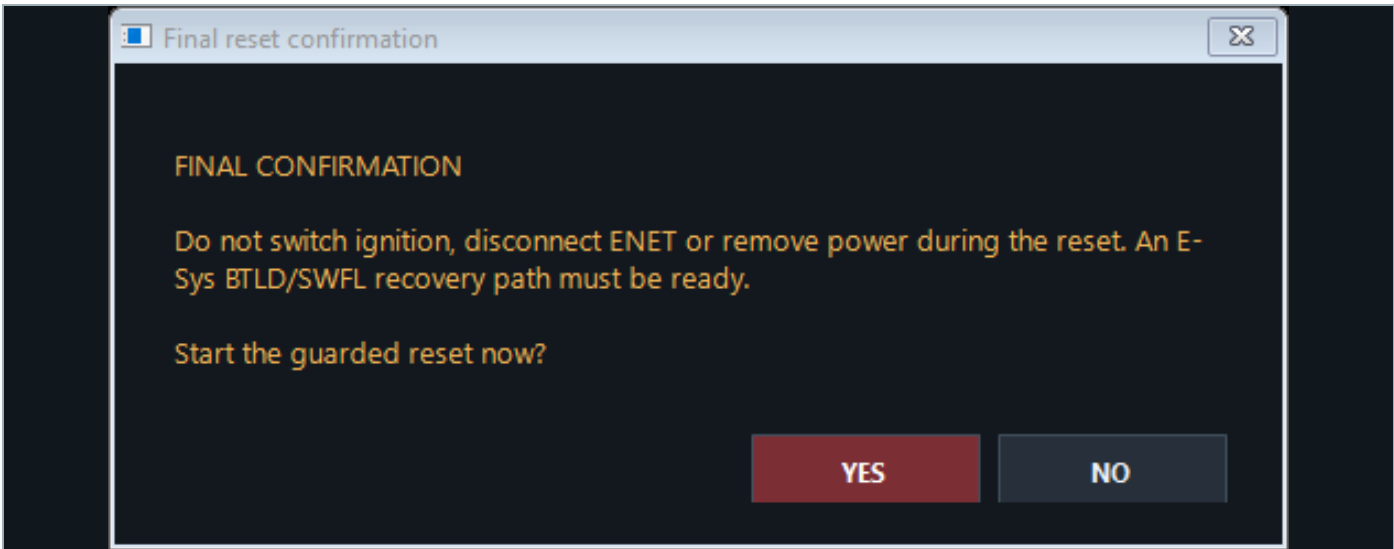
Correct and authorized target; EGS identified; supported EEPROM source known; DME VIN and 32-character ISN verified; regulated power stable; wired ENET stable; correct E-Sys BTLD/SWFL recovery path ready.

- 1 Confirm the connected BMW MAC, vehicle VIN, EGS VIN and software identity one final time.
- 2 Confirm the ZGW address has not changed since identification.
- 3 Confirm the loaded EEPROM path, DME VIN and 32-character EGS ISN belong to the intended procedure.
- 4 Select **RESET 2AB2 / 2AB6**. Read the first warning and select Yes only if every displayed source and target is correct.
- 5 Read the final warning. Confirm regulated power, wired ENET and the BTLD/SWFL recovery route again before selecting Yes.
- 6 Do not touch ignition, power, cable, adapter or another diagnostic tool while the operation is running.
- 7 Read the final status as described in the outcome table below. Re-identify and perform the required BTLD/SWFL verification or recovery before relying on the result.



First reset confirmation. It is a target and source checkpoint, not a formality.

Final confirmation and outcome



Final reset confirmation. Selecting Yes begins the state-changing sequence.

Application outcome	Meaning	Required action
Completed / C0 01 marker	The remaining first-response bytes ended in the legacy positive marker and the follow-up ECU-reset transaction completed.	Re-identify and verify the unit; complete planned BTLD/SWFL work.
Inconclusive / no C0 01 marker	The first transaction completed without that marker. The original procedure regarded this as possible, not definite, reset.	Do not assume success. Verify the unit and reflash BTLD/SWFL when required.
ISN request failed	Input or transport failed during the first connection.	Preserve the exact error; establish current ECU state before retrying.
Follow-up ECU reset failed	The ISN request was already sent, but the second connection/reset encountered a transport error.	Treat the state as uncertain. Re-identify and recover from evidence.

DO NOT REPEAT BLINDLY

An error after transmission does not prove that the EGS ignored the earlier request. Record the exact outcome and establish the current security/software state before another attempt.

Reports, logs and post-operation verification

Preserve enough evidence to reproduce the target decision and determine the last confirmed state after an interruption.

Record	Recommended content
Application	Version 2.0.0 and the official package source.
Vehicle / EGS	Full vehicle VIN, EGS VIN, BMW MAC, ZGW address and BTLD/SWFL/HWEL rows.
EEPROM	Original protected backup, file size, source, displayed VIN and independently verified ISN association.
DTC	Before report, selected class, erase decision and after-read result.
Reset	Action, both approvals, power/network state, exact final status and post-reset identification.
Recovery	Prepared E-Sys route, files used, result and final functional validation.

- Keep Before and After reports as separate files; do not overwrite the only pre-work record.
- The visible operation log exists for the current application session and is not the same as SAVE DTC REPORT.
- Record exact dialog/status text and time when a command is inconclusive or fails.
- Treat VINs, EEPROM images, ISNs, Device IDs and network addresses as controlled workshop/customer data. Redact them before public posting.

VERIFY AFTER EVERY STATE CHANGE

Re-read DTC after erase, reconnect after ECU reset, and re-identify/recover after 2AB2/2AB6 reset. A completion message is one item of evidence, not the complete acceptance test.

Troubleshooting by symptom

Correct the earliest failed prerequisite and preserve evidence before retrying. Most failures are target, power, adapter, route, runtime or source-file problems.

Symptom	Recommended action	Do not do
Application does not start	Confirm Windows support and .NET Framework 4.8; re-extract the complete official package.	Do not add random helper DLLs.
License file not found	Use INSTALL LICENSE or place the unmodified 2ab6.lic beside the EXE, then RETRY.	Do not rename another product's license.
License belongs to another computer	Copy the Device ID from the current computer and request the correct license.	Do not edit license fields.
New license is still rejected	Remove an obsolete portable 2ab6.lic beside the EXE; it has priority over the installed copy.	Do not move Windows time backwards.
No ENET gateway found	Check ignition/wake state, cable/link, IPv4 adapter, private firewall profile, VPN routes and competing tools.	Do not guess a vehicle target.
CONNECT: ZGW did not answer	Verify the selected IPv4 address and local UDP/TCP route; disconnect other tools.	Do not hammer CONNECT.
CONNECT: EGS did not answer F101/F190	Confirm the physical target, ZGW route and EGS wake state; reconnect only after the route is stable.	Do not proceed with partial identity.
EEPROM size rejected	Use a correct full supported read between 128 and 192 KiB inclusive.	Do not pad or crop a file to pass the size check.
ISN or VIN not found	Recheck read type/source and obtain the correct EEPROM image; compare with independent evidence.	Do not guess or type an ISN.
No matching DTC decoded	Retain the status and compare through the approved BMW diagnostic workflow when certainty is required.	Do not equate it automatically with zero faults.
Erase/reset transport error	Keep power stable, preserve exact text and establish the current ECU state before retrying.	Do not assume the command made no change.
2AB reset is inconclusive	Re-identify, verify security/software state and use the prepared BTLD/SWFL route as required.	Do not treat possible success as definite success.
Report cannot be saved	Choose a writable folder under the current Windows user and a valid file name.	Do not erase DTC before retaining needed evidence.
Layout is cramped	Resize the window; use 1024 × 768 or greater and change DPI only while idle.	Do not hide warnings to gain space.

STARTUP ERROR FILE

If startup fails, the application attempts to write %TEMP%\BinUnlock_2AB6_Workspace_startup_error.txt. Include that text with the version and Windows details when requesting support; do not publish licenses, EEPROM files or ISNs.

Action reference and glossary

Use this compact reference only after the safety and operating chapters are understood.

Action	Class	Availability / result
SCAN ENET	READ-ONLY NETWORK	Searches active local IPv4 adapters for ZGW replies and VINs.
CONNECT / DISCONNECT	CONNECTION	Identifies ZGW/EGS or closes and recreates the local diagnostic session.
OPEN EEPROM	READ-ONLY FILE	Locally analyses a 128-192 KiB image for VIN and 16-byte ISN.
READ NORMAL DTC	READ	Decodes matching normal-memory codes through the built-in catalogue.
READ SHADOW DTC	READ	Decodes matching shadow-memory codes through the built-in catalogue.
SAVE DTC REPORT	LOCAL FILE	Writes the last decoded DTC rows to a text file.
ERASE NORMAL DTC	STATE CHANGE	Confirmed normal-memory clear; reread to verify.
ERASE SHADOW DTC	STATE CHANGE	Confirmed shadow-memory clear; reread to verify.
RESET ECU	STATE CHANGE	Confirmed EGS reset; reconnect and verify.
RESET 2AB2 / 2AB6	SECURITY STATE CHANGE	Two confirmations; sends EEPROM-derived ISN, evaluates C0 01, then resets ECU.
USER GUIDE	LOCAL DOCUMENT	Opens this English operating guide.
License badge	LOCAL INFORMATION	Shows current term, Device ID and License ID.
BinUnlock icon	WEB LINK	Opens https://binunlock.com .
DARK NIGHT / DAY LIGHT	DISPLAY	Switches theme; Ctrl + Shift + T is the keyboard shortcut.

Glossary

Term	Meaning in this guide
2AB2 / 2AB6	EGS-related fault/security workflow names addressed by the guarded reset procedure.
BTLD / SWFL / HWEL	Bootloader, software-flash and hardware-equipment identifiers returned during EGS identification.
DTC	Diagnostic Trouble Code. Normal and shadow classes are read and erased separately.
EEPROM	Binary source image analysed locally for a VIN and the legacy ISN record pattern.
EGS	BMW electronic transmission control unit addressed through the ZGW.
ENET	BMW Ethernet diagnostic connection used between the Windows computer and vehicle network.
ISN	16-byte security value displayed as 32 hexadecimal characters and used by the guarded reset.
ZGW	BMW central gateway used as the local discovery/diagnostic endpoint.
C0 01	Legacy positive marker checked at the end of the first 2AB2/2AB6 reset response.
Transport-complete	The socket command/read path completed without an exception; not independent proof of final ECU state.

FINAL WORKSHOP CHECK

Before returning the vehicle: verify identity and communication, retain Before/After records, complete required E-Sys work, confirm normal EGS function and disconnect cleanly.