



BINUNLOCK LLC

Automotive software for professional service work

SME CELL RESTORE

Complete operating guide

BMW HVS (SME) 1/2 gateway discovery, diagnostic trouble codes, vehicle DTC erase, and the 29-step cell-data restore workflow.

VERSION 2.0 · ENGLISH · WINDOWS

Qualified service technicians only.

Read the safety, preparation, and pre-write chapters before any vehicle operation.
This is not a high-voltage repair or security-bypass guide.

Contents and document control

Independent BinUnlock manual for the current SME Cell Restore 2.0 interface. All screenshots contain simulated documentation data.

PRODUCT

SME Cell Restore 2.0

EDITION

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VERIFIED RELEASE EXE SHA-256

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PUBLISHER

BinUnlock LLC

SUPPORT

<https://binunlock.com/>

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DOCUMENT STATUS

This guide applies to the exact 2.0 release hash above. Replace it when the application workflow or binary changes.

This is an independent BinUnlock publication built for the current C# interface. It contains only current screenshots, original explanatory text, and approved workshop-safety boundaries.

How to use this guide

This guide follows a real workshop job from preparation and activation through diagnosis, cell-data restoration, verification, and handover.

READ FIRST

Read the complete preparation and safety chapters before connecting to a vehicle. The screenshots use a simulated documentation service and demonstration identifiers; no vehicle operation was executed to produce them.

Action class	Meaning	Examples
DISCOVERY	Finds and selects a network endpoint; it does not prove that a write is safe.	Detect ZGW; Scan Network; Select ZGW IP
READ	Requests information without intentionally changing the control unit.	Read DTC; Read Shadow DTC
CONTROL	Changes control-unit state and can temporarily interrupt communication.	Restart ECU
DESTRUCTIVE	Erases stored information or writes replacement data. Stable power, the correct vehicle, and an explicit plan are mandatory.	Erase DTC; Car DTC erase; WRITE
FILE	Creates a workshop record on the computer.	Save DTC list

- Button captions in green monospace are the exact English captions in SME Cell Restore 2.0.
- Monospace text identifies filenames, hashes, addresses, VIN examples, or exact status text.
- A red callout is a stop condition. An amber callout requires a deliberate check before continuing.
- The program is called SME Cell Restore; HVS 01/02 and SME refer to the high-voltage battery control-unit context used by the supported workflow.

SCOPE BOUNDARY

This document is not a high-voltage disassembly, isolation, programming, coding, or security-authorization course. Those tasks remain governed by current BMW/OEM procedures, workshop policy, and technician qualification.

Product scope and high-voltage safety

SME Cell Restore is a focused Windows utility for BMW HVS (SME) 1/2 gateway discovery, SME diagnostic-memory work, vehicle-wide DTC erase, and the recovered 29-step cell-data write sequence.

What the application does

- Discovers BMW ZGW endpoints through local IPv4 bindings and displays the reported IP and VIN.
- Reads and decodes normal and shadow SME DTC responses against the embedded 950-entry catalogue.
- Sends the normal or shadow SME DTC erase request and automatically performs the corresponding follow-up read.

- Sends the SME restart request after confirmation.
- Saves the visible DTC list to a deterministic UTF-8 text report.
- Sends the vehicle-wide DTC erase request after confirmation.
- Runs the complete 29-step replacement cell-data sequence with its required retries, delays, reconnects, and guarded close behavior.

What it does not do

- It does not repair damaged cells, contactors, insulation faults, sensors, wiring, or any other physical high-voltage defect.
- It does not calculate a programming plan, flash or code HVS 01/02, create NCD data, validate the ECU, or issue OEM security authorization.
- It does not prove that the high-voltage system is safe, that the vehicle is roadworthy, or that every ECU is fault-free.
- It does not replace ISTA test plans, service information, electrical measurements, or the judgement of an HV-qualified technician.

HIGH-VOLTAGE HAZARD

Do not open a high-voltage battery, touch orange HV components, defeat an interlock, or energize a repaired vehicle based on this guide. Follow the applicable lockout/tagout, absence-of-voltage, PPE, and OEM commissioning procedures.

Before proceeding	Required decision
Vehicle identity	Full VIN, vehicle, and selected ZGW belong to the current work order.
Repair state	Physical repair, insulation, connector, and cooling checks required by the repair plan are complete.
Programming state	The correct HVS software and coding state has been established with authorized tooling.
Authorization	Any required SFA/security authorization is valid and was obtained through the approved service process.
Power and network	The regulated support supply and wired Ethernet path can remain stable for the complete operation.

CHAPTER 03

Computer, network & workshop requirements

03

Prepare the environment before launching the application. Most avoidable failures come from unstable supply voltage, an incorrect endpoint, or a changing Windows network path.

Category	Requirement	Reason
Operating system	Windows 10 or Windows 11, 32-bit application support.	The release is a signed 32-bit WinForms executable.
Runtime	Microsoft .NET Framework 4.8.	The program will not start correctly without the supported runtime.
Application	The complete ZIP extracted to a normal, writable local folder.	Running from a ZIP viewer or temporary browser folder causes confusing file and license behavior.

Category	Requirement	Reason
License	A valid computer-bound <code>sme.lic</code> for the displayed HWID.	The main workspace remains unavailable when license validation at launch or Retry reports a missing, expired, modified, or different-computer license.
Vehicle link	Known-good wired BMW Ethernet/ENET path; active IPv4 adapter.	Gateway discovery and diagnostic traffic use the vehicle Ethernet network.
Power	A regulated, workshop-approved low-voltage programming support supply with adequate reserve.	Voltage loss or a vehicle sleep event can interrupt a destructive transaction.
Computer power	AC power connected; sleep, hibernation, and aggressive adapter power saving disabled.	The 29-step write must not be interrupted.
Other software	Close E-Sys, ISTA sessions, VPN paths, and other diagnostic programs that could compete for the same endpoint.	Concurrent sessions can consume responses or reset the connection.

KEEP THE ROUTE STABLE

Do not use Wi-Fi as the vehicle link, switch adapters, connect or disconnect a VPN, or allow Windows to sleep while an operation is active.

Recommended job folder

Create one folder per vehicle and keep the release hash, before/after DTC reports, screenshots, notes, and any OEM programming records together.

Example: `SME-Jobs\<VIN>\2026-08-12\` with subfolders `Before`, `After`, and `Logs`. Never overwrite the only pre-work report.

CHAPTER 04

Before SME Cell Restore: vehicle preparation

04

SME Cell Restore is the final focused tool in a larger approved repair workflow. Complete the vehicle and ECU preparation first; do not use the cell write to hide an unfinished programming, coding, or authorization problem.

1

Initial diagnosis and saved fault report

2

Physical repair and HV safety checks

3

Approved HVS programming and coding

4

ECU validation and required authorization

5

Close competing tools and verify ENET

6

Use SME Cell Restore

- 1 Run the approved vehicle test and save the initial fault report. Record the full VIN, HVS/SME identity, integration level, and the reason the cell-data restore is required.

- 2 Complete the physical repair and every HV safety, isolation, insulation, connector, cooling, and plausibility check required by the repair plan.
- 3 With authorized BMW/OEM service tooling, calculate and review the programming plan. If the plan requires HVS 01/02 programming, complete it on stable power before using this application.
- 4 Code the HVS/SME with the correct vehicle data and current compatible coding source. Do not use data from a different vehicle simply because it loads without an error.
- 5 Complete ECU validation and any current, valid SFA/security authorization required by the approved repair process. This manual intentionally does not provide token values or instructions to bypass vehicle security.
- 6 End the E-Sys/ISTA diagnostic session and close other programs that may retain the ZGW connection. Keep the physical ENET link and support supply in place.
- 7 Launch SME Cell Restore, select the correct ZGW, verify the displayed VIN, and read normal and shadow DTC before any erase or write.

EXTERNAL WORKFLOW

The exact TAL, NCD, CBB, SFA, and commissioning steps depend on vehicle software level, repair history, and authorized service-tool versions. Follow the current approved repair procedure; do not copy values from an old third-party PDF.

Stop condition	Required action
VIN is blank or does not match	Stop write work and identify the vehicle independently.
Programming/coding is incomplete	Finish the authorized programming workflow first.
A hardware or insulation fault remains	Repair and verify the hardware; cell-data writing is not the remedy.
Security authorization is missing or rejected	Use the approved authorization process; do not attempt a bypass.
Another tool remains connected	End that session before SME Cell Restore communicates with the gateway.

CHAPTER 05

Install and verify the application

05

Use the signed release from BinUnlock LLC and verify it before the first workshop job.

- 1 Download [SME_Cell_Restore_2.0.zip](#) from the approved BinUnlock distribution link.
- 2 Extract the entire archive to a local folder. Do not start the EXE inside the archive preview.
- 3 Right-click [SME_Cell_Restore_2.0.exe](#), open Properties, and inspect the Digital Signatures page for BinUnlock LLC.
- 4 Calculate the SHA-256 hash in PowerShell: `Get-FileHash .\SME_Cell_Restore_2.0.exe -Algorithm SHA256`.
- 5 Compare the complete result with the release hash printed below. A single different character means the file is not this verified release.

- 6 Start the application as the normal workshop user. Administrator rights are not required for ordinary use unless local policy requires them.

CURRENT RELEASE

Verified SME Cell Restore 2.0 EXE SHA-256:

654E8FC585B61639A1C7DC7FA0099C690849F63D27D5D18E2458564BEDF801E6

The release uses a BinUnlock LLC Authenticode signature with a DigiCert RFC3161 timestamp. The publisher certificate is pinned by the release process but is self-signed, so Windows reputation or trust prompts may still depend on local policy. Do not suppress a warning when the signer or hash differs.

Updating

- Wait until no vehicle operation is active, then close the application.
- Extract the new release to a new folder instead of overwriting the only working copy.
- Verify the new version, signature, and published hash.
- Reuse only the valid `sme.lic` when appropriate; never copy unknown helper DLLs or files from unrelated packages.

CHAPTER 06

License activation and expiry

06

The activation window appears when no valid license is available. Licenses are signed for the displayed computer HWID and may be issued for 10 days, 30 days, or without an expiry.

Device activation

Install the signed SME license issued for this computer.
Author and publisher: BinUnlock LLC

Theme: Light

License file not found.

HWID: DEMO-HWID-00000000000000000000000000000001

HWID

DEMO-HWID-00000000000000000000000000000001

Copy HWID

Install license...

Retry

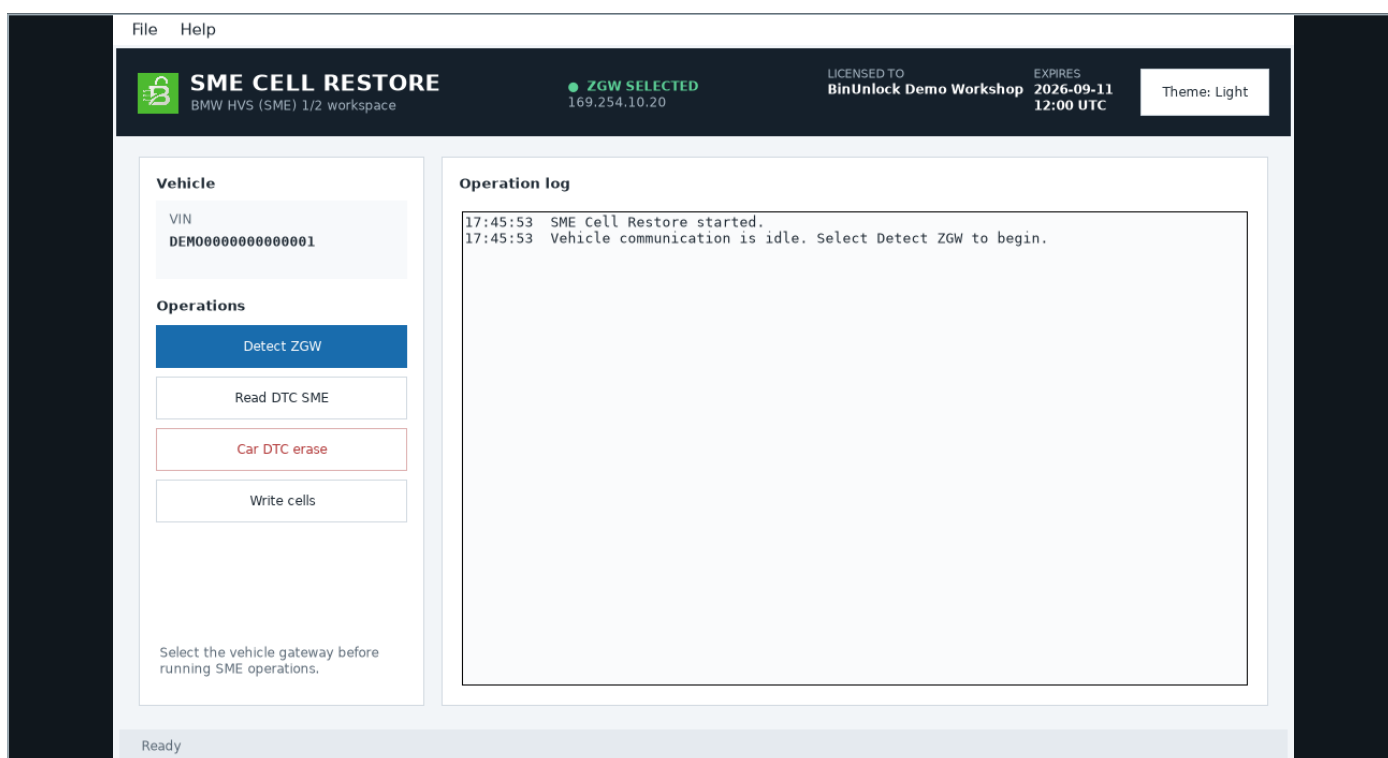
Exit

Device activation with a demonstration HWID. The green BinUnlock favicon is a website link; the shown identifier is not a real customer value.

- 1 Copy the complete HWID exactly as displayed.
- 2 Install the signed `sme.lic` returned for this computer.
- 3 Retry validation after placing or installing the file.
- 4 Exit closes the application without activation.

- 1 Press **Copy HWID** and send only that identifier through the approved BinUnlock licensing channel.
- 2 Select the required validity when requesting the license: 10 days, 30 days, or **Never**.
- 3 Save the returned file without editing it. Its expected filename is **sme.lic**.
- 4 Press **Install license...**, select the file, then press **Retry**. The program stores a user-local copy.
- 5 Alternatively, place **sme.lic** beside the EXE for portable use on the same licensed computer.
- 6 After validation, confirm the customer name and the **EXPIRES** value in the main header.

Header value	Meaning
Never	The signed license has no expiry. Existing valid legacy licenses also remain perpetual.
YYYY-MM-DD HH:mm UTC	The exact signed expiry time. The license is rejected when it is validated at or after that UTC instant.
License not found	Neither a portable nor installed sme.lic was found.
Another computer	The signed HWID does not match this computer.
Expired	Request renewal; changing the Windows clock is not a supported solution.
Modified / invalid signature	Obtain the original signed license again; do not edit the text file.



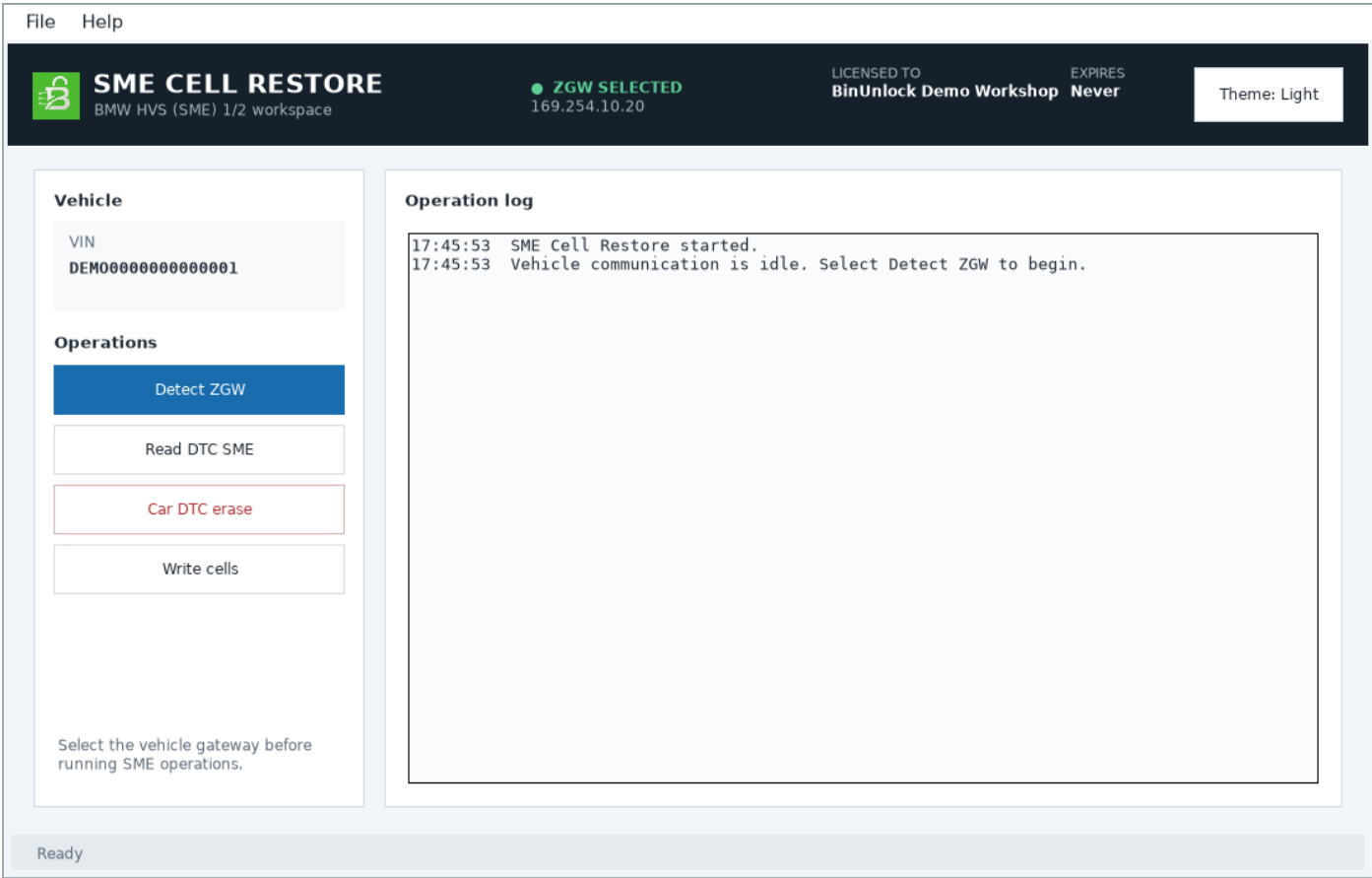
Example of a dated license in the main header. The date and customer are documentation fixtures.

LICENSE HYGIENE

Keep **sme.lic** private. It is a customer entitlement bound to one computer. It is not a private signing key and cannot generate licenses.

Main interface, status, and theme

The main window keeps vehicle selection, licensing state, the four operation routes, a chronological log, and the current operation status visible at the same time.



Main workspace in light theme with demonstration vehicle data and a perpetual license.

- 1

Clickable BinUnlock favicon and product title.
- 2

Selected-gateway state and IP address.
- 3

Licensed customer and exact expiry.
- 4

Light/dark theme control.
- 5

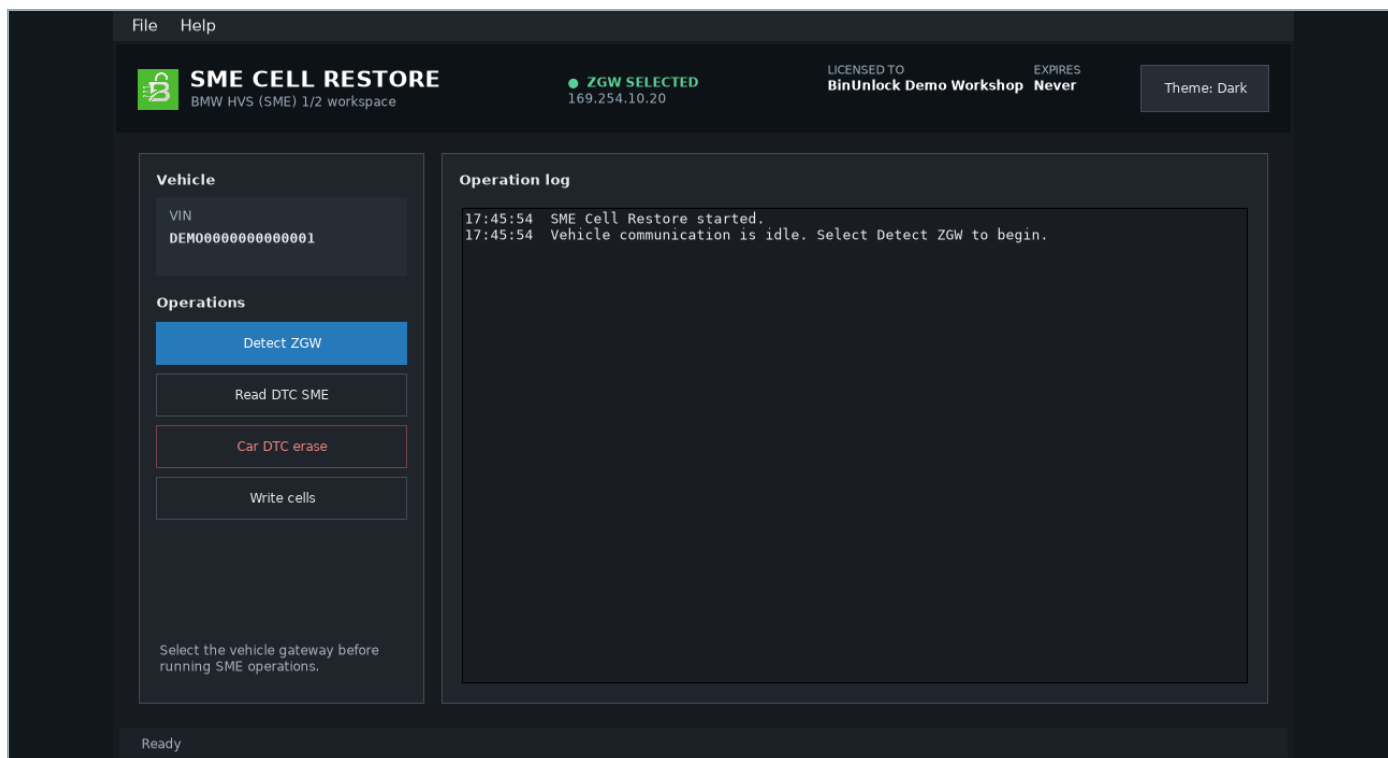
Vehicle VIN reported by discovery.
- 6

Four operation routes.
- 7

Chronological operation log.
- 8

Current operation status bar.

Element	Operator meaning
● NOT CONNECTED	No gateway has been selected in this session.
● ZGW SELECTED	An endpoint was selected. This is not proof that the vehicle or a destructive action is correct.
VIN card	VIN parsed from the discovery response; compare all 17 characters independently.
Operation log	Local timeline of selection and main-window operations. Preserve the exact error text when seeking support.
Status bar	Current task or Ready. Wait while a vehicle operation is active.
File → Exit	Closes the program only when no guarded operation is active.
Help → About	Shows version, scope, author, and publisher.



The same workspace in dark theme. Theme changes presentation only; vehicle behavior is identical.

- Click the green BinUnlock favicon to open <https://binunlock.com/> in the default browser.
- Use **Theme: Light** or **Theme: Dark** to switch every open SME window. The choice is retained for the next launch.
- If Windows display scaling changes while the program is open, close it only when idle and reopen it. At 125% or 150%, maximize a window when more space is required.

CHAPTER 08

Safe quick-start workflow

08

Use this order on every unfamiliar vehicle. Read and record before erasing or writing.

A

Prepare power, ENET, and the vehicle

B

Detect and select the correct ZGW

C

Verify the complete VIN

D

Read normal and shadow DTC

E

Save the Before state

F

Run one intended operation

G

Re-read, function-test, and save After

- 1 Connect the regulated programming supply and known-good wired ENET interface. Prevent vehicle and PC sleep.
- 2 Start the verified, licensed application and confirm the correct customer and expiry.
- 3 Press **Detect ZGW**, then **Scan Network**. Select the row belonging to the work-order vehicle.
- 4 Compare the displayed 17-character VIN with the chassis and job record. Stop on a blank or mismatched VIN.
- 5 Press **Read DTC SME**, then read both normal and shadow DTC memory.
- 6 Save or record the complete Before state. Do not erase the only diagnostic evidence.
- 7 Run only the action required by the approved repair plan. Read every confirmation and keep power/network unchanged.
- 8 After the operation, reconnect if necessary, read both memories again, save After reports, and complete the functional checks.

NO VEHICLE, NO WRITE

The application intentionally blocks most operations until a ZGW row is selected. Never work around disabled controls or treat a guessed IP as a verified vehicle.

Detect and select the vehicle gateway

Gateway discovery searches the computer's local IPv4 bindings for BMW ZGW responses. The result row combines the responding IP address and the reported vehicle VIN.

Vehicle gateway discovery

Search the active local network adapters for BMW ZGW.

Theme: Light

Scan Network

ZGW IP	VIN	Detected gateway
169.254.10.20	DEMO00000000000001	Demo BMW ZGW — 169.254.10.20

1 gateway found.

Select ZGW IP

Close

Gateway discovery with one selected demonstration row. IP, VIN, and gateway name are examples only.

- 1

Start a fresh scan of local IPv4 bindings.
- 2

Compare ZGW IP and complete VIN with the job.
- 3

Select exactly one row.
- 4

Commit the selected endpoint to the main window.

- 1

Press **Detect ZGW** on the main window. The discovery dialog opens.
- 2

Press **Scan Network** once and wait for the status line to finish. Do not repeatedly click while a scan is active.
- 3

If one or more rows appear, identify the correct vehicle by the full VIN and known network context.
- 4

Click one row. **Select ZGW IP** becomes available.
- 5

Press **Select ZGW IP**. The dialog closes and the main header and VIN card update.
- 6

Read the selected IP and VIN again before opening DTC or cell-write functions.

Result	Interpretation and next action
No BMW ZGW responses	Check ignition/wake state, Ethernet link, adapter enabled state, cable, firewall, VPN routes, and competing diagnostic sessions. Correct the cause, then scan again.
Multiple gateways	Do not select the first row by convenience. Match the full VIN and physical job.

Result	Interpretation and next action
Blank or short VIN	Discovery did not provide a complete identity. Do not perform a write until the vehicle is independently confirmed.
Wrong VIN	Stop. Verify cable, routed network, workshop bay, and the actual vehicle.
Scan failed	Preserve the exact error. A Windows socket or adapter error is different from an ordinary no-response result.

DESTINATION CHECK

Selecting a row changes the destination used by subsequent operations. If the selected vehicle changes, close active tools, scan again, and verify the new VIN before continuing.

CHAPTER 10

Read normal SME DTC

10

The DTC workspace separates normal and shadow fault memory. Start with a normal read and preserve the result before erasing anything.

DTC read and erase

Theme: Light

Normal DTC

Found DTC: 3

Read DTC

Erase DTC

Shadow DTC

Found DTC: 0

Read Shadow DTC

Erase Shadow DTC

Additional functions

Restart ECU

Save DTC list

Close

DTC

```

020700 - Energy saving mode active
020740 - Power supply: Local undervoltage
020781 - ONLINE_CERTIFICATES_AND_BINDINGS_TYPE2_NOT_READY

```

3 DTC entries loaded.

Normal DTC documentation example. The three codes are synthetic display data selected from the embedded catalogue.

- 1 Normal-DTC count.
- 2 Read or immediately erase normal DTC.
- 3 Separate shadow-memory controls.
- 4 Restart and file-report actions.
- 5 The shared visible DTC list.

- 1 From the main window, verify ZGW IP and VIN, then press **Read DTC SME**.

- 2 Press **Read DTC** under Normal DTC. The previous visible list is cleared before the connection attempt.
- 3 Wait until the status line reports the number of loaded entries or a no-result condition.
- 4 Read every code and description. Double-click one row to show it in a separate detail dialog when needed.
- 5 Capture or save the result before any erase. Add the vehicle VIN, date/time, and repair stage to the work order.

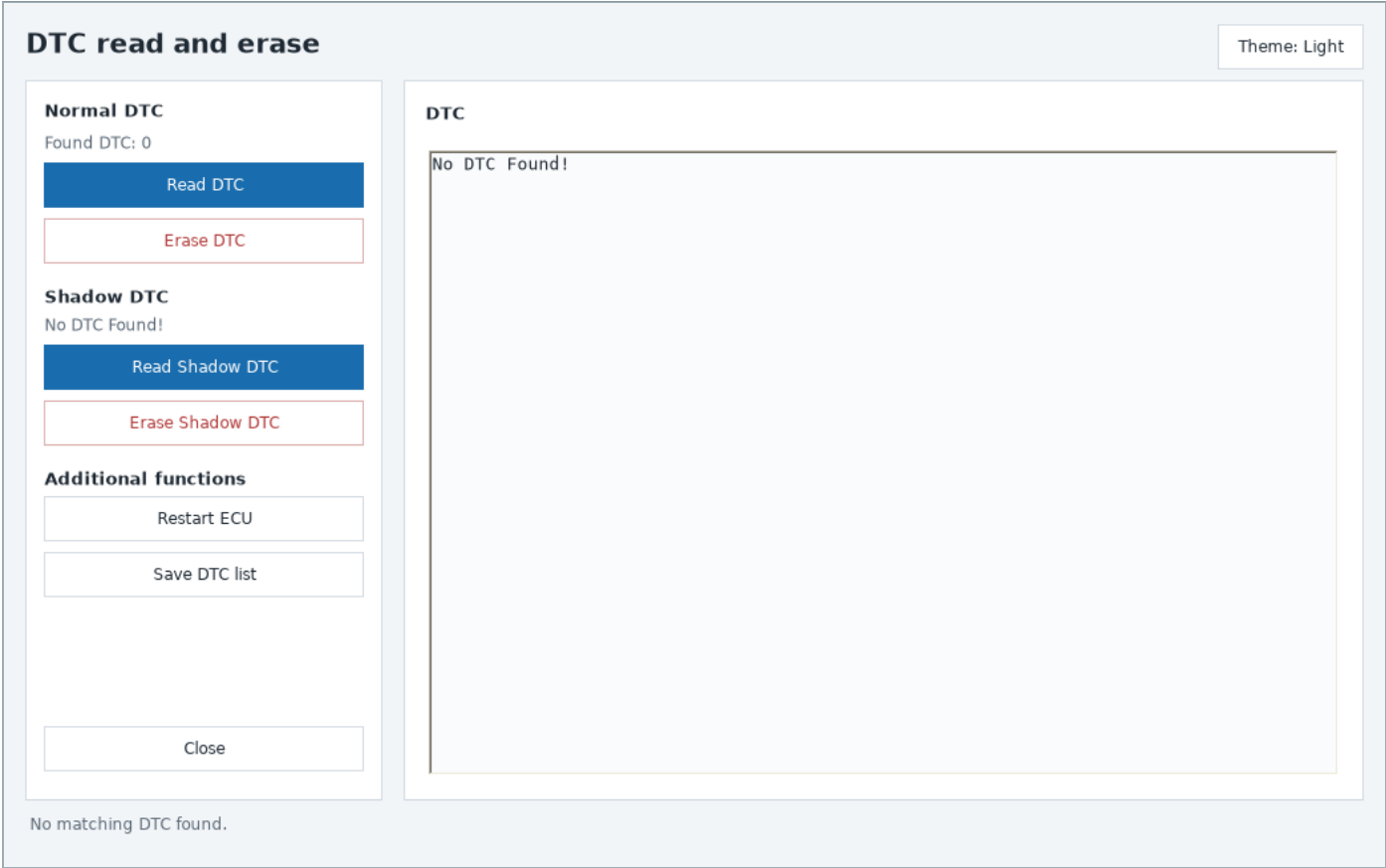
INTERPRET ZERO CORRECTLY

No DTC Found! or **No matching DTC found.** is an ambiguous empty state. It can mean that no received code matched the embedded SME catalogue, but the same display is also used after response silence or an overall receive timeout. It is not proof of a successful response, clean fault memory, vehicle safety, or fault-free ECUs.

- If the window reports **ZGW IP error.**, treat it as a connection failure, not as a clean DTC result.
- Before interpreting an empty state, recheck the selected IP and VIN, physical Ethernet link, vehicle wake state, and other diagnostic sessions. Preserve the ambiguity in the work record.
- The catalogue is displayed in its fixed source order; repeated raw occurrences do not create duplicate list rows.
- Unknown response codes outside the embedded catalogue are not turned into guessed descriptions.

Read shadow SME DTC

Shadow DTC is a distinct diagnostic request and has its own counter and erase action. Do not substitute a normal read for a shadow read.



Shadow DTC example with an empty result. Note the independent shadow status and the shared list message.

- 1 Press **Read Shadow DTC**.
- 2 Wait for the shadow counter and status line to update.
- 3 Record the result separately from normal DTC. A code may be present in one memory and absent from the other.
- 4 If the result is empty, document that exact state; do not reinterpret it as proof that normal memory is also empty.
- 5 Use **Save DTC list** while the desired normal or shadow result is currently visible.

Visible state	Meaning
Found DTC: N	N catalogue entries decoded from the most recent request are visible.
No DTC Found!	No shadow entry is displayed; this can also follow response silence or an overall timeout.
No matching DTC found.	Zero catalogue matches are displayed; this alone does not prove that a response was received.
Operation error dialog	The request did not complete normally. Do not record this as a clean zero result.

ONE VISIBLE LIST

The DTC list is shared between normal and shadow reads. Its current contents belong to the most recent read action, so label every saved screenshot or report with the memory type and whether communication was independently verified.

CHAPTER 12

Erase DTC, restart SME, inspect, and save

12

The DTC window contains several actions with different side effects. Understand the automatic follow-up behavior before pressing a red erase button.

Erase normal or shadow DTC

- 1 Save the current Before result first.
- 2 Press **Erase DTC** for normal memory or **Erase Shadow DTC** for shadow memory. These two buttons start immediately; this window does not show an additional confirmation dialog.
- 3 The application sends the erase request and then automatically performs the matching normal or shadow read.
- 4 Treat the `... erase completed.` status only as the end of this application workflow. The erase-request result is not independently validated, and an empty follow-up read can also represent silence or timeout.
- 5 Verify communication and review the follow-up list and counter. Remaining faults require diagnosis; repeated erase commands do not repair their cause.
- 6 Save the After result with a different filename.

Restart ECU

- 1 Press **Restart ECU** only when the repair plan requires a control-unit restart.
- 2 Read the confirmation and choose Yes only after checking power and network stability.
- 3 Wait for `SME restart request sent.` or an exact error message.
- 4 Allow the module to complete its boot process. If the endpoint is no longer available, close the DTC window, scan again, select the verified vehicle, and re-read both memories.

DTC details and text report

- Double-click a visible DTC row to open the complete line in a detail dialog.
- Press **Save DTC list**, choose a writable local folder, and use a descriptive filename such as `VIN_Normal_DTC_Before.txt`.
- The default filename is `dtc_list.txt`. The file is UTF-8 with a BOM and Windows CRLF endings, including the final line ending.
- An empty visible list cannot be saved. Save Before and After as separate files.

WAIT FOR COMPLETION

Do not close the DTC window while an operation is active. The close guard protects an in-progress diagnostic transaction; wait for the status to return.

CHAPTER 13

Vehicle-wide Car DTC erase

13

`Car DTC erase` is a main-window vehicle-wide operation. Its scope is broader than the normal and shadow SME erase buttons in the DTC window.

- 1 Select and re-verify the ZGW and complete VIN.
- 2 Save the diagnostic evidence required by the work order before erasing.
- 3 Press **Car DTC erase** and read the confirmation: **Erase diagnostic trouble codes in the vehicle?**.
- 4 Choose Yes only when the approved repair procedure calls for a vehicle-wide clear.
- 5 Do not touch ignition, power, cable, network, or the application while the operation is active.
- 6 Read the main operation log. **Vehicle DTC erase completed.** means the program received a non-empty burst, not that it validated a positive UDS acceptance. **Connect failed.** or **ERROR – connection failed or no response.** is not success.
- 7 Open **Read DTC SME** and independently read normal and shadow SME memory afterward.

Action	Scope	Follow-up
Erase DTC	Normal SME DTC memory	Automatic normal SME re-read
Erase Shadow DTC	Shadow SME DTC memory	Automatic shadow SME re-read
Car DTC erase	Vehicle-wide diagnostic erase request	Review main log, then manually open and read SME normal/shadow

DESTRUCTIVE DIAGNOSTIC ACTION

A vehicle-wide erase destroys diagnostic history needed for fault isolation. Never use it merely to make a dashboard appear clean, and never claim success after a connection/no-response result.

Write cells: purpose and preparation

The cell-data function is intended for the specific HVS 01/02 case in which the approved repair and programming workflow is complete but ISTA cannot restore the required cell data.

HVS 01/02 cell data restore

Theme: Light

If ISTA is unable to restore the cells, this function writes replacement cell data to HVS 01/02.

This does not affect vehicle operation. Cell numbering does not cause a functional problem; the sequence bypasses the EOS test. Keep the vehicle power supply stable and do not disconnect the network while writing.

Ready — 0 / 29

ZGW 169.254.10.20

WRITE

Close

Cell-data restore window before start. Read the complete warning and verify the selected ZGW before pressing WRITE.

- 1 Purpose and non-interruption warning.
- 2 Initial progress: 0 of 29.
- 3 Selected ZGW destination.
- 4 WRITE starts after a second confirmation.
- 5 Close is available only while idle.

USE ONLY FOR THE INTENDED CASE

Do not use Write cells to repair a physical battery fault, bypass an unresolved authorization problem, or compensate for incomplete programming/coding. The function writes replacement cell data and follows the recovered 29-step SME transaction.

Mandatory pre-write checklist

- Correct work-order vehicle and full VIN independently verified.
- Correct ZGW row selected; displayed IP and VIN rechecked immediately before opening the window.
- Physical HVS repair and all required HV safety checks complete.
- Required HVS programming, coding, ECU validation, and valid authorization complete through approved tooling.
- Before normal and shadow DTC results captured and saved.
- Regulated support supply stable with sufficient reserve; cables secured.
- Wired Ethernet route stable; other diagnostic software, VPN switching, sleep, and updates stopped.
- Technician will remain present and monitor all 29 steps.

Complete the final go/no-go decision table on the next page immediately before the write.

Question	Required answer
Is the displayed VIN the correct vehicle?	YES
Is the cell-data restore required by the approved repair plan?	YES
Are hardware, programming, coding, and authorization prerequisites complete?	YES
Can power and network remain unchanged until the operation finishes?	YES
Is any item uncertain?	STOP and resolve it before pressing WRITE

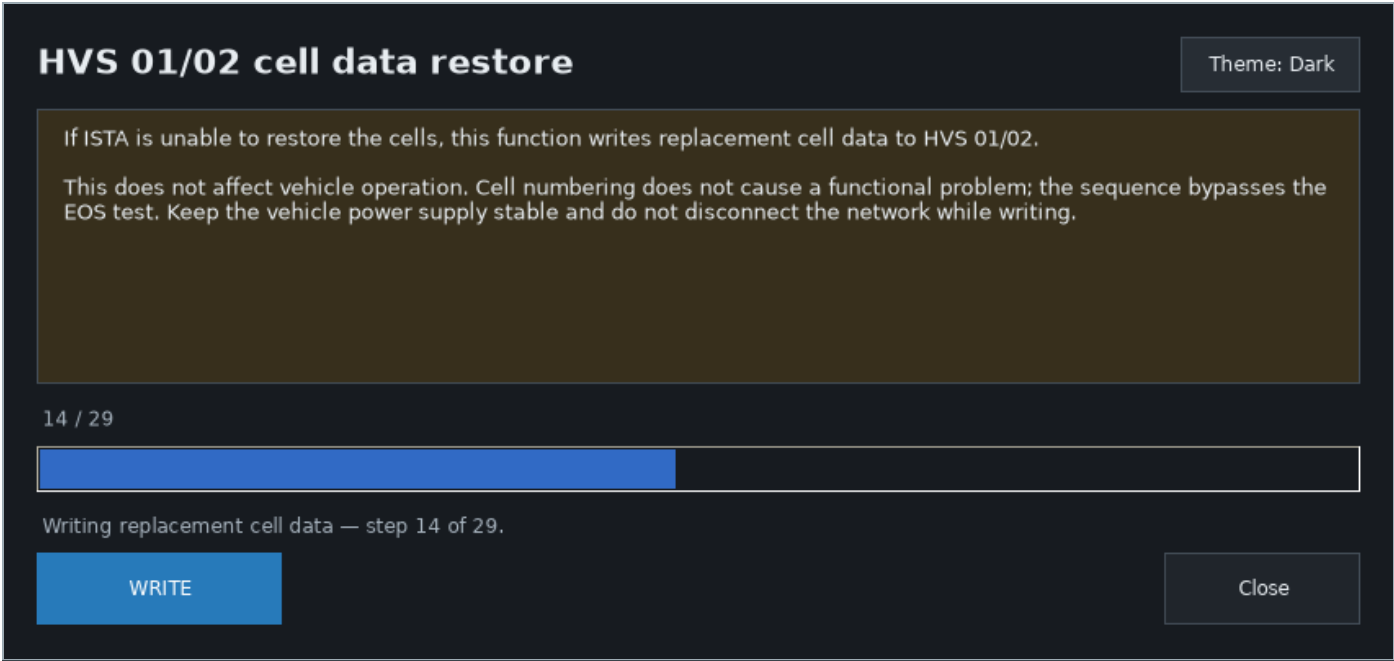
CHAPTER 15

Write cells: complete operator procedure

15

Once confirmed, the sequence is intentionally non-cancellable. The application controls retry, delay, and reconnect branches; the operator must protect power and network stability.

- 1 Open **Write cells** from the main window and re-read the warning and selected ZGW address.
- 2 Press **WRITE**. In the confirmation dialog, verify the instruction not to interrupt power or network communication.
- 3 Choose Yes. The **WRITE** and Close buttons, window close control, and ordinary cancellation path are disabled while the sequence is active.
- 4 Watch the numerical progress, progress bar, and status text. The normal path advances from 0 / 29 to 29 / 29.
- 5 If the application reports an automatic retry or reconnect, do nothing. Do not cycle ignition, unplug ENET, or launch another tool.
- 6 Wait for the explicit **Cell data write completed successfully**. dialog. The write window then closes.
- 7 Proceed immediately to the post-write verification chapter; success of the transaction is not the same as completion of the vehicle repair.



Documentation-only progress state at step 14 of 29 in dark theme. No vehicle write occurred during capture.

- 1

Current completed-step count.
- 2

Progress bar across the 29-step contract.
- 3

Current operation detail.
- 4

Controls remain unavailable during the active sequence.

Observed state	Operator response
Progress advances	Continue monitoring; make no connection or power changes.
Automatic retry/reconnect status	Wait. The application is executing the recovered retry branch.
Success dialog and 29/29	Continue to DTC and functional verification.
Explicit Cell write failed: ... dialog	Record the exact message and completed step; do not immediately press WRITE again.
Operation returns before 29/29 and WRITE remains disabled	Treat as an unsuccessful legacy-compatible terminal branch. Close only after controls return, preserve the last step, and investigate before another attempt.
Window says the sequence cannot be interrupted	Wait; closing is intentionally blocked while the transaction is active.

NON-INTERRUPTIBLE SEQUENCE

Never use Task Manager, power removal, ignition cycling, cable removal, computer restart, or forced shutdown to stop an active cell write.

CHAPTER 16

When communication or a write fails

16

Recovery begins by preserving the last known state. Random retries can destroy the evidence needed to decide whether a request was accepted.

- 1

Keep the regulated support supply and physical network connected unless electrical safety requires immediate isolation.

- 2 Write down or photograph the progress count, exact status line, dialog text, selected IP, and time.
- 3 Wait until the application is no longer busy. If the close guard remains active, do not force the process to end.
- 4 When control returns, do not press WRITE or erase again. Save the visible information and note whether WRITE is enabled or remains disabled.
- 5 Check the Ethernet link and vehicle wake state without changing the repair configuration.
- 6 Close the child window only when allowed, run a fresh ZGW scan, verify the VIN, and open the DTC workspace.
- 7 Read normal and shadow DTC. Preserve both results before clearing anything.
- 8 Compare the failure stage with the job's programming, coding, authorization, power, and network records. Escalate with complete evidence when the accepted state is uncertain.

DO NOT GUESS

There is no universal 'press WRITE again' recovery procedure. A timeout, connection reset, silent terminal branch, programming defect, authorization rejection, and hardware fault require different decisions.

Evidence to retain	Example
Application identity	Version 2.0 and complete EXE SHA-256
Vehicle identity	Full VIN, selected ZGW IP, work-order number
Operation	Exact button and confirmation selected
Progress	Last visible count and status, for example 14/29
Failure	Complete dialog/status text, not a cropped fragment
Environment	Supply state, ENET adapter, other tools, Windows events
Before/After diagnosis	Normal and shadow DTC reports with timestamps

CHAPTER 17

Post-write validation and vehicle handover

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A successful 29/29 transaction must be followed by diagnostic and functional validation. Do not hand over the vehicle on the success dialog alone.

- 1 Allow the SME and vehicle networks to settle. If the endpoint restarted or disappeared, wait for full boot, scan again, and select the verified VIN.
- 2 Open the DTC workspace and read normal DTC. Save the immediate post-write result before erasing.
- 3 Read shadow DTC and save it separately.
- 4 Evaluate every remaining fault through the approved test plan. Do not repeatedly clear persistent faults.

- 5 When authorized by the repair plan, erase the relevant normal/shadow memory and perform the automatic follow-up read.
- 6 Restart the SME only when required, then rediscover/reconnect and read both memories again.
- 7 Complete the OEM commissioning and functional test. Under the applicable HV safety procedure, verify vehicle Ready/start behavior, gear selection P/R/N/D, and normal charging operation.
- 8 Resolve remaining SecOC/security or validation faults only through current authorized procedures and valid authorization; do not bypass them.
- 9 Save final reports, application/version/hash information, and the work notes with the vehicle record.

Handover gate	Pass condition
Identity	VIN and selected gateway confirmed after final reconnect
Communication	SME responds consistently after restart/boot
Normal DTC	Read, interpreted, and saved after the final operation
Shadow DTC	Read, interpreted, and saved separately
Vehicle function	Ready/start, P/R/N/D, and charging verified under approved conditions
Remaining faults	Diagnosed or documented with an approved resolution plan
Records	Before/After reports and job notes stored without overwriting originals

NO HANDOVER ON AN UNRESOLVED FAULT

If the vehicle does not enter Ready, select gears correctly, charge normally, or has an unresolved HV/SecOC fault, stop the handover and continue the approved diagnostic process.

CHAPTER 18

Troubleshooting by symptom

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Work from the earliest failed prerequisite. Do not repeatedly run the final destructive action while the cause is unknown.

Symptom	Checks and corrective action	Do not do
EXE does not start	Confirm Windows 10/11, .NET Framework 4.8, complete extraction, local folder access, signature, and exact release hash.	Do not download random DLLs or disable security controls.
Windows publisher/reputation warning	Verify BinUnlock LLC signature and complete published SHA-256. Apply workshop trust policy.	Do not proceed when signer/hash differs.
License file not found	Copy the displayed HWID, obtain the signed <code>sme.lic</code> , install it or place it beside the EXE, then Retry.	Do not rename unrelated license files.
License belongs to another computer	Request a license for the current HWID.	Do not edit HWID or license fields.
License expired	Request renewal and check correct UTC time.	Do not roll back the system clock.
No gateways found	Check support power, ignition/wake state, cable/link LEDs, adapter enabled state, IPv4, VPN route, firewall, and competing tools.	Do not select a guessed vehicle.

Symptom	Checks and corrective action	Do not do
Wrong or blank VIN	Stop writes; verify the physical car, network route, bay, and gateway response independently.	Do not accept a partial identity.
ZGW IP error / connection failed	Keep it distinct from a zero-DTC result; verify the selected endpoint and network path, then rescan.	Do not record it as 'No faults'.
No DTC Found	Treat it as ambiguous: no catalogue match and response silence/overall timeout share this display. Verify endpoint, link, wake state, and competing sessions.	Do not record it as proof of clean memory or a successful response.
Restart loses the endpoint	Wait for full boot, scan again, select the verified VIN, and re-read normal/shadow memory.	Do not keep sending to a stale socket.
DTC save fails	Choose a writable local folder and a valid filename; retain the visible list until saved.	Do not overwrite the only Before report.
Write stops before 29/29	Preserve step/status, wait until idle, keep power stable, rescan, read both memories, and diagnose before deciding on recovery.	Do not force-close or hammer WRITE.
Dark-theme text hard to read	Use the current release, switch themes once, reopen after a Windows DPI change, and maximize at high scaling.	Do not alter vehicle steps to solve a display issue.

USEFUL SUPPORT PACKAGE

For support, send the application version/hash, full VIN and ZGW IP, exact action, timestamp, complete error text, progress step, and Before/After DTC reports. A cropped dialog alone is not enough.

CHAPTER 19

Workshop records, privacy, and support

19

A complete record makes the repair reproducible and protects the original diagnostic evidence.

Artifact	Suggested filename
Application identity	<code>SME_2.0_EXE_SHA256.txt</code>
Normal DTC before	<code><VIN>_Normal_DTC_Before.txt</code>
Shadow DTC before	<code><VIN>_Shadow_DTC_Before.txt</code>
Normal DTC after	<code><VIN>_Normal_DTC_After.txt</code>
Shadow DTC after	<code><VIN>_Shadow_DTC_After.txt</code>
Cell write note	<code><VIN>_Cell_Write_YYYYMMDD_HHMM.txt</code>
OEM programming record	Store the approved TAL/coding/validation report in a separate Programming folder.

- Store the full VIN only in the protected work-order system appropriate to your jurisdiction and workshop policy.
- Do not publish customer HWIDs, licenses, VINs, or screenshots containing them.
- Do not send `sme.lic` to third parties. Support normally needs the visible HWID and diagnostic evidence, not private credentials.
- Keep Before reports immutable; create new After files instead of overwriting them.
- Record who approved the destructive operation and which repair-plan step required it.

BINUNLOCK SUPPORT

Official product and support site: <https://binunlock.com/>. The same fixed address opens when the green BinUnlock favicon is clicked in the application.

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CHAPTER 20

Complete action reference and glossary

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Use this final section as a quick index after the full procedure is understood.

Window	Action	Class	Result
Activation	BinUnlock favicon	LINK	Opens the fixed BinUnlock website in the default browser.
Activation	Theme	DISPLAY	Switches light/dark theme and saves the choice.
Activation	Copy HWID	LOCAL	Copies the current computer identifier.
Activation	Install license...	FILE	Copies the selected signed <code>sme.lic</code> to user-local storage.
Activation	Retry	VALIDATION	Validates the available license again.
Activation	Exit	NAVIGATION	Closes without activation.
Main	Detect ZGW	DISCOVERY	Opens Vehicle gateway discovery.
Main	Read DTC SME	NAVIGATION	Opens the DTC read/erase workspace.
Main	Car DTC erase	DESTRUCTIVE	Confirms and sends the vehicle-wide erase operation.
Main	Write cells	NAVIGATION	Opens the HVS 01/02 cell-data restore window.
Main	Theme	DISPLAY	Switches and persists light/dark theme.
Main	BinUnlock favicon	LINK	Opens https://binunlock.com/ .
Main	File → Exit	NAVIGATION	Closes when no operation is active.
Main	Help → About	INFORMATION	Shows version, scope, author, and publisher.
Discovery	Scan Network	DISCOVERY	Searches local IPv4 bindings for gateway responses.
Discovery	Select ZGW IP	SELECTION	Sets the selected endpoint/VIN for subsequent operations.
Discovery	Close	NAVIGATION	Closes without changing the selection.
DTC	Read DTC	READ	Reads normal SME DTC memory.
DTC	Erase DTC	DESTRUCTIVE	Sends the normal SME erase request, then automatically re-reads normal memory.
DTC	Read Shadow DTC	READ	Reads shadow SME DTC memory.
DTC	Erase Shadow DTC	DESTRUCTIVE	Sends the shadow SME erase request, then automatically re-reads shadow memory.
DTC	Restart ECU	CONTROL	Confirms and sends the SME restart request.
DTC	Save DTC list	FILE	Saves the currently visible list.
DTC	Double-click row	INFORMATION	Shows the complete selected DTC line.
DTC	Close	NAVIGATION	Closes only when no operation is active.

Window	Action	Class	Result
Write	WRITE	DESTRUCTIVE	Confirms and runs the non-cancellable 29-step sequence.
Write	Close	NAVIGATION	Closes only while the write sequence is idle.

Glossary

Term	Meaning in this guide
DTC	Diagnostic Trouble Code.
ENET	BMW Ethernet diagnostic connection.
HVS	High-voltage storage/battery system context used by the supported BMW workflow.
SME	The HVS control-unit context targeted by the diagnostic and cell-data functions.
ZGW	BMW central gateway detected on the Ethernet network.
Normal DTC	The application's standard SME diagnostic-memory request.
Shadow DTC	The application's separate SME shadow-memory request.
TAL	Programming transaction list produced by authorized BMW service engineering tooling.
NCD	Coding data used by the approved ECU coding process.
SFA	Vehicle security-function authorization used by authorized procedures where required.
SecOC	Secure onboard communication. Remaining SecOC faults require authorized diagnosis/authorization, not a bypass.
HWID	Computer identifier to which the signed SME license is bound.

DOCUMENT CONTROL

End of the English operating guide. Keep this PDF with SME Cell Restore 2.0 and replace it when the application workflow or release hash changes.