

# ABRITES DIAGNOSTICS FOR BMW/MINI





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The Abrites software and hardware products are developed, designed and manufactured by Abrites Ltd. During the production process we comply to all safety and quality regulations and standards, aiming at highest production quality. The Abrites hardware and software products are designed to build a coherent ecosystem, which effectively solves a wide range of vehicle-related tasks, such as:

Diagnostic scanning; Key programming; Module replacement, ECU programming; Configuration and coding.

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Read the full hardware warranty terms on our website

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Abrites assumes no responsibility for any damage resulting from the use, misuse, or negligent use of the hardware or any software application.

### Safety information

The Abrites products are to be used by trained and experienced users in diagnostics and reprogramming of vehicles and equipment. The user is assumed to have a good understanding of vehicle electronic systems, as well as potential hazards while working around vehicles. There are numerous safety situations that cannot be foreseen, thus we recommend that the user read and follow all safety messages in the available manual, on all equipment they use, including vehicle manuals, as well as internal shop documents and operating procedures.

#### Some important points:

Block all wheels of the vehicle when testing. Be cautious when working around electricity.

- Do not ignore the risk of shock from vehicle and building-level voltages.
- Do not smoke, or allow sparks/flame near any part of the vehicle fuel system or batteries.
- Always work in an adequately ventilated area, vehicle exhaust fumes should be directed towards the exit of the shop.

Do not use this product where fuel, fuel vapours, or other combustibles could ignite.

In case any technical difficulties occur, please contact the **Abrites Support Team by email at <u>support@abrites.com</u>** 

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# List of revisions

Date	Chapter	Description	Revision
01.10.2015	ALL	Document created	1.0
18.02.2015	ALL	Document created	1.1
24.06.2016	ALL	Document created	1.2
23.03.2017	General Diagnostics	Document created	1.3
08.06.2017	3.2.4 Keys and Start	Added description	1.4
04.10.2017	3.2.4.1 Keys and Start 3.2.4.2 8/6HP adaptation	FEM key programming and EGS adaptation	1.5
15.08.2018	3.2.4.1 FEM/BDC diagrams	Added eeprom reading/ writing diagrams	31.6
08.05.2019	3.2.5.3 ECU Wiring diagrams	Added MSD80/MSD81, MSD85/MSD87,MSV90 wiring diagrams	31.8
30.05.2019	3.2.5.3 ECU Wiring diagrams	Added MEVD17.2.9 boot mode wiring diagram	31.8
27.03.2020	3.2.4.5 8HP/6HP EGS Adaptation	Added information about all EGS adaptation procedures	32.1
27.03.2020	3.2.4.2.1 FEM/BDC/CAS4 Immobilizer data backup	Added information about immobilizer data backup	33.2
08.02.2023	ALL	General Structural Revison Added EWS Manager information MD/MG Exchange	2.0
14.02.2023	11.2 & 11.3	ZF 8HP EGS Reset and Adapt	2.1

# List of revisions

Date	Chapter	Description	Revision
03.10.2024	9	EWS Manager	2.2
09.05.2025	ALL	Revision	2.3
04.08.2025	9	BDC2 Key Learning G Series	2.4

### 1. Introduction

"ABRITES Diagnostics for BMW/Mini Online" is an Online server based diagnostic software for BMW vehicles from the "E" and "F" series as well as Mini vehicles from the R50, R53 and R56 series. It requires the user to have connection to the Internet during the usage of the software.

In order to operate the software requires you to have an AVDI interface, a Windows based PC with Windows 7 or later version of the Windows OS and a stable Internet connection.

With the help of this tool you can perform reading and clearing of diagnostic trouble codes as well as operations unsupported by other diagnostic tools with the electronic modules inside the vehicle such as replacement and coding of control units, programming vehicle order, reprogramming flash memory of the units, applications assisting tuning of your engine control unit, programming keys, coding of the vehicle as well as mileage calibration. Functionality of your software depends on ordered functions for your interface.

Please check the "license viewer" installed on your computer for your unique interface ID number.

The software is in constant development and its functionality is ever growing. The intentions for the Abrites Diagnostics for BMW Online are to be used by automotive specialists, but it is simultaneously designed in such a way that is accessible to enthusiasts as well.

AVDI should be used with ABRITES software produced by Abrites Ltd.

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### 2. Installation

The "ABRITES Diagnostics for BMW/ Mini Online" is installed together with the rest of the Abrites diagnostic software applications when the installation files are received.

You could easily identify it by the Internet connectivity symbol as shown here:





### 3. Using the Abrites diagnostics for BMW/ Mini

When starting the software the user should have the vehicle connected to an external power source in order to be sure that the vehicle does not lose power during the time spent working with it. When the software is started the user will have the option to choose a brand and a model produced by this brand. After that the protocol of the vehicle will be automatically detected and General Diagnostics screen will be displayed.

Some of the general diagnostic functionalities are:

- Scanning for modules
- Read and Clear DTCs
- Monitoring Live Data
- Actuator testing, and more

Apart from the basic diagnostic functions the Abrites diagnostics for BMW/Mini Online allows the user to perform various diagnostic functions at an extremely high diagnostic level. Such functions include:

- Coding
- Programming
- Key Learning
- Mileage Calibration
- Program ID VIN change
- Module Replacement and Adaptation
- Vehicle Order

### 4. General Diagnostics

Below you may see a screenshot of the main screen in the BMW Online software. It shows all the main functions listed in the left-hand side of the screen, and a list of modules in the main screen. Some of the general diagnostic functionalities are:

- Scanning for modules
- Read and Clear DTCs
- Monitoring Live Data
- Actuator testing, and more

C ABRITES Diag	nostics 34.0	www.abrites.com		-		$\times$
K Home	BMW	M550D				٩
Enter Filter			General Diagnostics			
Scop	Address	Acronym	Name	B	aults	
Juli	00	JBBF	Junction-box electronics			
Clear Faults	01	ACSM	Crash safety module			
Program IDs	02	SZL_LWS	Switch centre, steering column			
Central Coding Vehicle Order	06	TRSVC	allround-view camera			
Programming	08	HC2	lane change warning			
Keys & Start Synchronization	0E	SVT	Servotronic			
Guided Functions	10	ZGW2	Central Gateway Module	1	fault	
Mileage	12	DME	Digital diesel electronics			
ECU Tool	17	EKPM2	Electronic fuel pump control module			
	18	EGS	Electronic transmission management			
	19	LMV_FR	Transfer box			
	1C	ICM	Integrated chassis management			
-	21	FRR	Active cruise control			
A·B·R·I·T·E·S	29	DSC2	Dynamic Stability Control			

### 4.1 Scan

When pressing the **Scan** button the user will see the electronic modules installed in the vehicle they are currently working with. The number of faults within each will also be displayed.

ABRITES Diag	nostics 34.0 v	www.abrites.com		_		×
K Home	BMW	M550D				٩
Enter Filter			General Diagnostics			
Scan	Address	Acronym	Name	Fa	ults	
	00	JBBF	Junction-box electronics			_
Clear Faults	01	ACSM	Crash safety module			
Program IDs	02	SZL_LWS	Switch centre, steering column			
Central Coding Vehicle Order	06	TRSVC	allround-view camera			
Programming	08	HC2	lane change warning			
Keys & Start Synchronization	0E	SVT	Servotronic			
Guided Functions	10	ZGW2	Central Gateway Module	1	fault	
Mileage	12	DME	Digital diesel electronics			
ECU Tool	17	EKPM2	Electronic fuel pump control module			
	18	EGS	Electronic transmission management			
	19	LMV_FR	Transfer box			
	1C	ICM	Integrated chassis management			
	21	FRR	Active cruise control			
A·B·R·I·T·E·S	29	DSC2	Dynamic Stability Control			

#### 4.2 Clear faults

When selecting the **"Clear faults"** function all the diagnostic trouble codes will be deleted from the electronic modules available in the vehicle.

There may be fault codes that require additional user input (i.e component replacement and others) in order for the fault code to be cleared.

Please note that some fault codes may be indicative to special diagnostic procedures for the special functions of the Abrites Diagnostics for BMW/ Mini generation 2.

ABRITES Diag	nostics 34.0	www.abrites.com		- 🗆	$\times$
K Home	BMW	M550D			505 205
Enter Filter			General Diagnostics Scanning	(	$\bigcirc$
Scan	Address	Acronym	Name	Faults	
	00	JBBF	Junction-box electronics		
Clear Faults	01	ACSM	Crash safety module		
Program IDs	02	SZL_LWS	Switch centre, steering column		
Central Coding Vehicle Order	06	TRSVC	allround-view camera		
Programming	08	HC2	lane change warning		
Keys & Start Synchronization	0E	SVT	Servotronic		
Guided Functions	10	ZGW2	Central Gateway Module	1 fault	
Mileage	12	DME	Digital diesel electronics		
FCUTool	17	EKPM2	Electronic fuel pump control module		
	18	EGS	Electronic transmission management		
	19	LMV_FR	Transfer box		
A·B·R·I·T·E·S	1C	ICM	Integrated chassis management		
			Please wait	Ì	STOP

#### 4.3 Live values

In order to display the live values of a module within a vehicle the user should select the module they would like to view the values for, open it and select "Live values".

C ABRITES Diag	nostics 34.0 www.abrites.com	-		×							
K Home	BMW M550D DME Values			٥							
Enter Filter	Values										
Query	101 Engine speed - Diagnosis request			^							
Graphics	✓ 102 Coolant temperature - Diagnosis request										
Graphics	✓ 103 Engine oil temperature - Diagnosis request										
Select All	✓ 104 Battery voltage - Diagnosis request										
	105 Emissions warning light: Status - Diagnosis request										
	106 Emissions warning light: Distance travelled since activation - Diagnosis request										
	107 Engine warning light: Status - Diagnosis request										
	108 Number of driving cycles since the fault memory was deleted - Diagnosis request										
	109 Distance travelled since the fault memory was deleted - Diagnosis request										
	107 Engine warning light: Status - Diagnosis request         108 Number of driving cycles since the fault memory was deleted - Diagnosis request         109 Distance travelled since the fault memory was deleted - Diagnosis request         110 Operating time since engine start - Diagnosis request										
Home       BNW       M550D       DME       Values         Enter Filter       Values         Query       I 01 Engine speed - Diagnosis request         Graphics       Ø       102 Coolant temperature - Diagnosis request         Select All       Ø       104 Battery voltage - Diagnosis request         I 05 Emissions warning light: Status - Diagnosis request       I 05 Emissions warning light: Status - Diagnosis request         I 06 Emissions warning light: Status - Diagnosis request       I 06 Emissions warning light: Status - Diagnosis request         I 07 Engine warning light: Status - Diagnosis request       I 09 Distance travelled since the fault memory was deleted - Diagnosis request         I 100 Porating time since engine start - Diagnosis request       I 100 Operating time since engine start - Diagnosis request         I 111 Operating hour counter - Diagnosis request       I 111 Operating hour counter - Diagnosis request         I 111 Operating hour counter - Diagnosis request       I 15 Oil pressure: Nominal value - Diagnosis request         I 15 Oil pressure: Nominal value - Diagnosis request       I 16 Oil pressure: Nominal value - Diagnosis request         I 16 Oil pressure: Nominal value - Diagnosis request       I 16 on relevant - Diagnosis request											
	113 Idle: Status - Diagnosis request										
	V 103 Engine oil temperature - Diagnosis request elect All V 104 Battery voltage - Diagnosis request 105 Emissions warning light: Status - Diagnosis request 106 Emissions warning light: Status - Diagnosis request 107 Engine warning light: Status - Diagnosis request 107 Engine warning light: Status - Diagnosis request 108 Number of driving cycles since the fault memory was deleted - Diagnosis request 109 Distance travelled since the fault memory was deleted - Diagnosis request 110 Operating time since engine start - Diagnosis request 111 Operating hour counter - Diagnosis request 113 Idle: Status - Diagnosis request 113 Idle: Target speed - Diagnosis request 150 Oli pressure - Diagnosis request 151 Soll pressure - Diagnosis request 151 Soll pressure - Diagnosis request										
	115 Oil pressure - Diagnosis request										
	115 not relevant - Diagnosis request										
	116 Oil pressure: Nominal value - Diagnosis request										
A·B·R·I·T·E·S	116 not relevant - Diagnosis request			~							

A list of all available values for the unit will be displayed. From here the user can select the sensors needed to be observed. Once that is done the user can select whether they would observe the values in a **query form** or a **graphic form**. This can be done for multiple sensors simultaneously. In case the user selects the option to view the measured values in a graphic form they will be able to see the screen below for all of the selected sensors. The simultaneous display of multiple values allows for easier and more detailed fault diagnostics.

The measured values can be monitored, saved to a file on the user's computer, zoomed in for more detailed view or zoomed out for a more general view using the buttons on the side of the window. The user also has the ability to load a previously saved file for direct comparison.

C ABRITES Diagnostics 34.0 www.abrites.com		-	×
k Home BMW M550D DME Values Query			 ٢
Values			
104 Battery voltage	11.94 [V]		
103 Engine oil temperature	69.5 [°C]		
102 Coolant temperature	79 [°C]		



#### 4.4 Actuator tests

Actuator testing is one of the most important functions used by automotive workshops. It provides the user with the opportunity to test various actuators within the vehicles. By performing actuator tests the user can easily determine where a fault in the vehicle lies. Some very important modifications and service procedures with vehicles require the usage of actuator tests.

C ABRITES Diagnostics 34.0 www.abrites.com	-		×
k Home BMW M550D DME Actuators		.c00	٢
Actuators	Liv	ve Values	
Electric fan			
Electric fan			
Delete fault memory			
Delete fault memory			
Control			
Exhaust-gas recirculation bypass flap			
Swirl flap			
Cooling air routing (if fitted)			
• Air duct, flap			

One of the features unique to the Abrites diagnostics for BMW/ Mini generation 2 is the feature to perform actuator tests while observing live data measured values from sensors related to the actuator or module being tested. All the user needs to do in this situation is to press the "**>**" button.

Once the Actuator test is started please make sure that you let it finish before closing the window.

ABRITES Diagnostics 34.0 www.abrite	s.com						-		×
Home BMW M550	DME	Actuators						.cO)	٢
Actuat >	Add +	Clear All	×		Live	Data			
Electric fan	d75bx7a	) : 102 Co	olant	tempe	erature			80	[°C]
<ul> <li>Electric fan Activation finished</li> </ul>									
Delete fault memory	d75bx7a0	) : 104 Ba	ttery	voltag	e			11.9	4 [V]
Delete fault memory	d75bx7a	) : 103 Eng	gine o	oil tem	perature			68.6	[°C]
Control									
<ul> <li>Exhaust-gas recirculation bypass</li> </ul>	fla								
• Swirl flap									
Cooling air routing (if fitted)									
<ul> <li>Air duct, flap</li> </ul>									

### 5. Program IDs (Vehicle Identification Numbers)

When checking a vehicle and replacing modules often times the user will need to be able to view the **IDs** (VIN) of the separate electronic modules within the car. This is done via the **"Program IDs"** button

ABRITES	Diagnostics 34.0	) www.abrites.co	om				_	×
K Ho	ome BMW	M550D	VIN					 ٩
Enter Filter				Vehicle	e Identificatio	on Numbers		
Scan Vehic	Address	Acronym	VIN					_
Save to Fi	[00]	JBBF	WBAS	D91050D0610	)55			^
Write VIN	s [01]	ACSM	WBAS	D91050D0610	)55			
User Info Fie	elds [02]	SZL_LWS	WBAS	D91050D0610	)55			
	[06]	TRSVC	WBAS	D91050D0610	)55			
	[08]	HC2	WBAS	D91050D0610	)55			
	[0E]	SVT	WBAS	D91050D0610	)55			
	[10]	ZGW2	WBAS	D91050D0610	055			
	[12]	DME	WBAS	D91050D0610	055			
_	[17]	EKPM2	WBAS	D91050D0610	055			
A·B·R·I·T·	E·S [18]	EGS	WBA	D91050D0610	)55			~

Some IDs may be programmed according to local regulations.

Observe the vehicle identification numbers (VIN) from all modules in one place. Ability to modify them which is a necessary tool for module replacement. VIN writing is also a useful instrument even for routine operations like flashing the firmware of DME (some modules require resetting the VIN at the end of the update). Observe the history of the module – the UIF (user info fields)

### 6. Central Coding (Vehicle Order)

Allows reading and modification of the vehicle order in many different languages. Encoding of every unit of the vehicle with data from the vehicle order. The user is also allowed to tweak custom options in different modules to unlock behavior that is not allowed by the official software (like video in motion, different light options, etc.)

Once this function is selected the software will automatically start reading the integration level of the vehicle.

C ABRITES Diag	nostics 34.0	www.abrites.c	om					-	×
K Home	BMW	M550D	Central Coding						 ٢
	Current	Vehicle Or	der: Filter	r		Available Opt	tions:	Filter	
Read from	code	name				code	name		_
venice	Build Date					Build Date			
Save to File	0713	July 2013			Remove	E-Words			
Load from File	Vehicle Typ	æ				Aftermarket fitment			
Write in Vehicle	5D91	M550D N57 LL 8	CE		Remove	Vehicle Type			
	E-Words					Options			
	A105	AGM battery 105	Ah, plant		Remove				
	Options								
	1CB	ACEA/CO2 conte	nt		Remove				
	100	Automatic Start/	Stop function		Remove				
	1CD	Brake Energy Re	generation		Remove				
	230	EU-specific addi	ional contents		Remove				
	248	Steering-wheel h	eating		Remove				
	258	Tyres with emerg	ency run-flat tyre sys	tem	Remove				
	2ND				Remove				
	Options								

	_	M550D Central Couling				00	
	Curren	t Vehicle Order:		Available C	Options:	Filter	
Read from	code	name		code	name		
Vehicle	Options			OI12	Deactivation of	f seat belt warning, front	A
Save to File	248	Steering-wheel heating	Remove	OENE	Opening lugga	ge compartment lid with	A
oad from File	258	Tyres with emergency run-flat tyre system	Remove	RKPE	Conversion, st	traight-ahead driving	A
/rite in Vehicle				ОКОМ	Deactivation of	f convenience opening	A
	2ND		Remove	OMSA	Storage state	of MSA activated	А
	Options			NPOW	Conversion Po	wer Kit	А
	2PA	Locking wheel bolts	Remove	КАМР	Conversion re	placement CAN bus hi-fi	A
	2ТВ	Sports automatic transmission	Remove	KDD2	Retrofit, Diese	el BluePerformance packa	ις Α
	2VA	Adaptive Drive	Remove	KCBS	Correction of	brake pad wear model	A
	302	Alarm system	Remove	KDCU	Retrofit DCU	21 for DCU 20	A
	316	Automatic operation of tailgate	Remove	LEMO	Conversion po	wer enhancement M6	A
	322	Comfort access system	Remove	MODT	Control of the	dual speedometer	A
	323	Soft-Close function for doors	Remove	NHLF	Retrofit rear li	ght facelift	A
	337	M Sports package	Remove	NAVI	Integrated na	- vigation via iDrive control	k A
P.D.I.T.F.S	358	Climate comfort windscreen	Remove	NEKO	Retrofit new	air conditioning compress	
S KITE'S	346	Rear view camera	Remove		nea ony new	and a second of the second of	- "

As soon as the reading is finished all the details about the **central coding** will be displayed.

Using the buttons on the side the user can save the coding to a file on their computer, load previously saved coding, as well as updating changes to the vehicle.

It is strongly recommended to save the Current vehicle order data before applying any changes to the vehicle by using the option **"Save to File"**.

These functions are irreplaceable during modifications and tuning often asked for by the customers.

You will be able to easily remove options from the **"Current vehicle order"** the button **"remove"** and add new ones from the **"Available Options"** using the button **"Add"**. You will be able to add/remove options, retrofit different modules etc.

You will be also able to filter your search by entering the name of the desired option in the "Filter" field.

### 7. Programming

Re-flashing of the firmware of the modules with newer (or older if required) software versions. The user is presented with the firmware versions of each module and is given suggestions of what is the most proper version of each module. What distinguishes that function from what the original software tool provides is the ability to choose arbitrary flash version. The user can either accept or ignore the flash version suggestions and apply whatever operation they think is necessary to the module. This gives great flexibility and can solve problems that even the dealer tool could not tackle. For example finding the best data flash of motor computers – Abrites programming function allows experimenting to flash every data flash that the user chooses to try, instead of firmly limiting the user to one specific option.

ABRITES Diagr	nostics 34.0 www.abrites.com –		×
K Home	BMW X6 I-Level		5005
	Integration Level		
Read Vehicle			
Load Vehicle			
Load Versions			
Save Versions	ECUs. Please follow all safety precautions and keep in mind the possibility of possible ECU damage.		
	ОК		
A'B'R'I'T'E'S			
	Please wait 7		STOP
			-
ABRITES Diag	nostics 34.0 www.abrites.com –		×
K Home	BMW X6 I-Level	.aDD	٩
	Integration Level		
Read Vehicle	[10] Flash v. 52.30.10 BDC_GW Central Gateway Module		
Load Vehicle Order	[40] Flash v. 52.40.10 BDC_BODY Body Domain Controller		
Load Versions			
A·B·R·I·T·E·S			
	Available versions:		
Done	052.030.010		^
Cancel	✓ 052.040.010		
A·B·R·I·T·E·S	061.010.030		
I-Step(current):	F025-17-03-505 F025-17-03-505		~
I-Step(rdst/).	: F025-17-03-505		

Once the desired flash version is selected you will see the following window appear. All you need to do is to make sure that the supplied voltage does not drop below 13.6V and press and hold the **"START"** button to begin.

One of the unique features is the predictive selection of the most compatible flash file as a suggestion in the second field. It is absolutely obligatory to have the vehicle connected to an external power source for programming. Alternatively the consequences may be irreversible.





### 8. ECU Replacement

#### 8.1 MD/MG replacement

Our new development lets you exchange MD/MG Electronic Control Units in BMW G-series vehicles. To be able to do that, you need to have the configuration data (DFlash) of both the original and the replacement unit.

**Note:** You are able to read the configuration data (DFlash) of MD/MG units with the Engine Control Unit Programming software and the EP003 license, and with the dedicated cable set for working on bench -CB023 – BMW MD/MG ECU Connection Cable, and the ZN051 DS Box.

Once the configuration data (DFlash) is available on your computer and the replacement unit is installed in the vehicle, you can start the procedure in the BMW Online software > Keys and Start synchronization menu > EWS Parts Adaptation > DME Exchange. The procedure is guided, there are on-screen messages which give you all the details, you just need to follow the software guidelines.

It is recommended that you provide 13.6 V power supply to the vehicle while the procedure is being executed.

ABRITES Diagnostics 34.3 www.abrites.com	- 🗆	×
Keys         Home         BMW         X4         Keys         EWS Parts Adaptation		0
EWS Parts Adaptation		
DME/DDE Adaptation		
<ul> <li>This is the Abrites DME/DDE module adaptation. Please ensure the following condition are met before starting the operation:</li> <li>1. You have the replacement (new or used) DME/DDE's mounted in car.</li> <li>2. You have the old DME/DDE's configuration data (DFlash).</li> <li>3. You have the replacement (new or used) DME/DDE's configuration data (DFlash).</li> </ul>	15	
Press <b>Start</b> to run the operation.		
Cancel Start		

Here are the steps how the procedure is executed:

You need to have the configuration data (DFlash) of the original and the replacement ECU Install the replacement ECU in the vehicle Open the BMW Online software > Keys & Start synchronization > DME Exchange

Start the procedure and follow the on-screen messages, which ask you to provide the DFlash of the original (old) unit first, and than the DFlash of the replacement (new or used) unit

The procedure will continue, asking you to make sure the **power supply** of the vehicle does not drop below **13.6V**, and when you click next the procedure will take around 5 minutes to complete.

C ABF	RITES Diagn	ostics 34.3 w	ww.abrites.co	om				-		×
¢ beck	Home	BMW	X4	Keys	EWS Parts Adaptation				OO	٢
					EWS Parts	Adaptation				
				D	ME/DDE	Adaptation				
	Sof the ens 1.   2.	tware version next step t sure the follo Make sure External p	ons differ b the <b>replace</b> owing cond that the s ower sup	etween the ement (ne ditions are r supplied v ply is conn	old and rep w. or used) net before co oltage does nected to the	lacement (new DME/DDE module ntinuing the opera not drop below e car.	or used) DME will be reprogration: 13.6 V.	/DDE modules. I ammed. Please	'n	
					Cancel	Next				



### 9. Key Programming

Key learning is one of the key features of the Abrites diagnostics for BMW/Mini Online. Using it the users can perform key learning for all CAS 1, CAS 2, CAS3, CAS3+, CAS4, FEM and BDC vehicles via OBDII including those with latest ISTA-P updates. If the user has working key for the car and wants to make a spare one, the key learning is a fast and easy process. (FEM and some BDC modules above softare version 85) require preparation, which is not done via OBDII.

If all keys are lost and a new one has to be made then the process is more complicated, but all the necessary tools are included in the package.

They can enable or disable key positions etc.

### 9.1 CAS3/3+ Key Programming (E-Series)

To begin with the user has the ability to observe and modify the key data in the CAS module.

ABRITES D	iagnostics 31.6 www.abrites.com	-	×
< Home	BMW E70 Keys		 ٢
	Remote control frequency 868 MHz Key 1 in ignition. BMW Remote		
CAS Keys	Key 0 - BMW SmartKey (Keyless GO)		
Synchronize CAS & DME	V Key 1 - BMW Remote		
Synchronize CAS & ELV	Key 2 - Empty Position		
ISN codes			
EWS Parts Adaptation	Key 3 - Empty Position		
	Key 4 - Empty Position		
	Key 5 - Empty Position		
	Key 6 - Empty Position		
	Key 7 - Empty Position		
	Key 8 - Empty Position		
	Key 9 - Empty Position		
A·B·R·I·T·E·S			

When adding keys to a vehicle the user will need to use the TAG or the PROTAG programmer. It will need to be connected to the user's AVDI if it's Tag Prog and to the PC via USB connection if it is a PROTAG.

In the cases when a key is added to the existing set the working key needs to be placed in the TAG programmer. Tag Programmer. Allows the user to observe, check and modify HiTag2 key data. The user is given hints for the key contents whether the data is consistent and options to correct it(very useful tool when the key is not an original BMW key).



From the **"CAS keys"** menu the user can choose to **Save** the data to a file on their computer and use it as a backup file, **Load** previously saved data, **program** a key, **clear** the current positions, clear the CAS and keys and write the CAS EEPROM/CONF DATA.

IMPORTANT: It is strongly recommended to **Save** the current key data to a file before applying any changes.

ABRITES D	Diagnostics 31.6 www.abrit	tes.com		<u></u>		×
< Home	BMW E70 Keys	CAS Keys				٢
		Wor Selecte	king key 1 ed Position 0			
Load from File	Position 0	BMW SmartKey				^
Save to File	SerialNo	0F 50 A2 99	Remote Number	66 A2		
	CryptoHigh	97 6B	Remote CryptoHigh	97 6B	•	
	CryptoLow	6B E2 D3 AD	Remote CryptoLow	6B E2	D3 AD	
Tag Programer	Config	C8 E2 96 39	Remote Synchro	7A CA	OC FC	
Program Key	Status	02 5B 00	Remote Status	00 00	02	
Clear CAS position						
Clear Key and CAS						-
Write CAS EEPROM	Position 1	BMW Remote				-
	Position 2	free				
	Position 3	free				
	Position 4	free				
A·B·R·I·T·E·S	Position 5	free				
						~

In the cases where there are no keys available in order for one to be added and the car is in an all keys lost situation the Individual Serial Number (ISN) from the DME must be read. This situation will need you to keep the car awake and the best practice is to either shorten pins 1 and 16 on the OBD or to make e temporary transponder.

#### 9.2 FEM/BDC Key Programming (F-Series)

The Key programming requires you to have active AMS, PROTAG programmer and in most cases it is done via OBDII. In some particular cases described in the sections below you may need an ABPROG or a 3rd party programmer. Once the software is started, please go to the "Keys And Start Synchronization Menu" and open the "EWS Manager". The EWS Manager is a very user-friendly tool with great functionalities for FEM/BDC/CAS4.

The key learning procedure is done via OBDII for BDC units up to software version 85, for FEM and BDC above software version 85 you would need to first unlock the unit.

The key learning procedure is started by selecting "Program Key" and requires ISN to be known, and there are 2 ways to obtain it:

- From the DME/DDE
- From a working key

Here is where you start if you have the FEM unit already prepared. The screenshots are from procedure where ISN from DME/DDE is used. The software is guided, so all you need to do is to follow the instructions.

It is highly IMPORTANT to supply 13.6 Volts or more, so that the procedures can run smoothly and finish successfully. An external power supply is a must.

ABRITES Diagnostics 34.0 www.abrites.com	-	×
Keys EWS4		 ٥
Functions		
Enter DME/DDE ISN :		
ENTER DME/DOE ISN X		
6		
<b>A</b>		
d v {a		
c e		
Cancel Next		

At the last stage you need to hold the key against the ring aerial, located on the steering column and also called emergency slot. With this step completed, the key learning process is finished successfully and the new empty key should now be able to start the car, and also the remote would work.

If everything is done correctly as per the on-screen messages, the procedure will end with a message "Process finished Successfully"

	BRITES Diagn	ostics 34.0 w	www.abrites.com	n			-		×
¢ back	Home	BMW	M550D	Keys	EWS4 EWS5			OO	٥
					Fu	nctions			
A d v a n c e d	Hold new Status : I Key ID sł Current F Current K	key agains Default Va nowd be : A requency In requency In rey Part Nur	t the ring ae lue,Reservi 13 5C 16 34 00 00 00 nvalid Freq mber : 00 0C	rial ed For Re uency 0 00 00	placemen	riting Key : Key (No Key Detected) Cancel			
						12			



Below you may read fill detail on how to execute the procedure via OBDII for BDC units below version 85 and FEM/BDC (above 85) when unlocked.

There are two possibilities when programming keys to FEM/BDC F- Series vehicles.

- 1. All keys lost
- a. In this procedure you need to connect to the vehicle, the ignition will automatically turn on as this is the way the Abrites Diagnostics for BMW Online operates.
- b. Then you need to navigate to "Keys"
- c. Choose ISN codes to read the ISN code of the DME/DDE which you will need in order to continue with the All keys lost programming. This will most likely require programming. Make sure your car is connected to an external power supply.
- d. Once the ISN is extracted you can copy it to a notepad on your computer and go to EWS manager. There you will see all the options we provide:
- Program keys
- Clear mileage
- Save EWS DATA
- Restore EWS DATA
- Erase Key
- Virginize

NB! We strongly suggest you save the EWS data in order to have a backup!

- e. Choose "Program key"
- f. Enter the ISN from the DME/DDE and continue.
- g. Choose an empty position where you would like the new key to be programmed.
- h. Put the new empty key in your PROTAG and wait for it to be written.
- i. Once the key has been written place it on the slot marked with a key and two arrows on the steering column of the vehicle. BMW refer to it as a "Ring Aerial".
- j. The key is programmed and can now start the vehicle.
- 2. Adding keys spare key programming

The procedure for adding keys is very similar to the "All keys lost" procedure, however it implies that you have a working key for this vehicle where we can get the ISN from much easier.

- a. Go to EWS manager
- b. Choose Program key
- c. Choose working key
- d. Place the working key in your Protag programmer to obtain the ISN.
- e. Choose a position for your new key
- f. Place the new key on the Protag
- g. Once the key has been written place it on the slot marked with a key and two arrows on the steering column of the vehicle. BMW refer to it as a "Ring Aerial".
- h. The key is now ready to start the car

**BDC** Connections

When using the Abrites Diagnostics for BMW online software to program keys to BDC cars of the F Series you can use two different connection options:

#### 1. CB015 ENET (Ethernet to OBD) Cable.

When you use this cable, you can connect the ENET cable directly into your PC using the specific LAN port supplied to it. Please make sure you have your AVDI connected to your PC as well and also make sure that the AVDI is not connected to the vehicle's OBD because you are going to use the CB015 ENET cable for that purpose.

#### 2. OBDII cable CB100 or CB106.

When you use this connection simply connect your AVDI to your computer and connect the CB106/100 to it on one end and to the vehicle on the other.

NB! Please make sure to have a stable power supply going to the vehicle for the duration of this procedure.

Protag is also required to be connected to the PC

There is a reason for using two different connection types. This is done for versatility. If you use the ENET CB015 the procedure for BDC key programming will require much less time (around 5-10 minutes). If you do not have an ENET cable you can still use your standard OBDII cable with your AVDI, however the procedure lasts almost 30 minutes.

Prepare FEM units and BDC (avobe software version 85) units

With this updated procedure you only need to read the FEM/BDC (software version above 85) memory once, which saves a lot of time.

The procedure is automatic from beginning to the end, it is created as a guided function, and it gives all required messages on the screen with all necessary steps that need to be executed. There also is a manual (advanced) procedure, which lets you manually choose a part of the procedure you want to execute. It is very helpful when the process is cancelled for any reason, and thus you can continue from where you left.



- 1. Net Coding steps:
- Read and save original Net Coding Data from the FEM/BDC module
- 2. EEPROM reading and modification steps:
- Disconnect and remove FEM/BDC from the vehicle
- Read and save FEM/BDC EEPROM using Abprog or other programmer
- FEM/BDC EEPROM modification, preparation, and writing
- 3. FEM/BDC data uploading steps:
- Reconnect and install FEM/BDC back to vehicle
- Uploading/Programming procedure

\*Please make sure that the supplied voltage does not drop below 13.6V, make sure the external power supply is connected to the car, after that at the next step the control unit data will be uploaded/programmed.

- 4. Original Net Coding Data writing steps:
- Load previously saved Net Coding data.

Steps 1.1 and 1.2 are dedicated to the reading of the Net Coding Data from the FEM/BDC Module and are done in the vehicle with OBDII connection.

Step 2.1 in the screenshot below is the beginning of the EEPROM reading.

#### It is very important to stickily follow the steps described in this process:

- 1. Disconnect AVDI from OBDII port
- 2. Disconnect the car's battery and external power supply
- 3. Remove FEM/BDC EEPROM (ST M95256)

You have the option to read the EEPROM with Abprog programmer and the Abprog needs to be connected at this stage. Another option is to upload a dump file previously read with another programmer. \*Here is when the **"Advanced functionalities**" come handy - they are described in a separate dedicated section, check for details. If you get to the point where you need to read the EEPROM with another programmer, you would most probably have to cancel the procedure. Later on, you can continue with from where you left.

-	DOUTEC D	1. 240	1.11							~
	ABRITES Diag	nostics 34.0 V	ww.aprites.co	om				-		~
baci	Home	BMW	X6	Keys	EWS4 EWS5				.cDU	٢
					Intro	)				
				Step 2.	1 EEPRO	M Modific	ation			
	1 Disco	pport AVDI	from OPD :	aart						
	2. Disco 3. Remo	nnect AVDI nnect the ca ve FEM/BDC	r's battery a	and externa (ST M95256	ll power sup 5).	oply.				
	Pool	with ABProg	(Connect Ab	prog)						
A		with Other D	rogrammor (	l ood Dump)						
v ka	U Read	with Other Pi	rogrammer (	Load Dump)						
c e										
d										
				(	Cancel	Select				
_			1.1						_	X
2/	ABRITES Diag	nostics 34.0 w	www.abrites.co	om				-		×
	ABRITES Diag	nostics 34.0 w	www.abrites.co	om Keys	EWS4 EWS5			-		× 0
Lack	ABRITES Diag	nostics 34.0 w	ww.abrites.co X6	om Keys	EWS4 EWS5 Intro	1		-		×
	ABRITES Diag	nostics 34.0 w	xww.abrites.co	om Keys	Ews4 Ews5 Intro Precon	ditions		_		×
	ABRITES Diag	BMW	xww.abrites.co	om Keys	EWS4 EWS5 Intro Precon	ditions		_	- - 000	×
	ABRITES Diag	BMW	X6	Keys	EWS4 EWS5 Intro Precon	ditions		-		×
	ABRITES Diag	BMW	xww.abrites.co	Keys	Ewst Ewss Intro Precon	ditions		-		×
	ABRITES Diag	BMW	x6	om Keys	EWS4 EWS5 Intro Precon	ditions		-		×
	ABRITES Diag	nostics 34.0 w	X6	om Keys	Ews4 Ews5 Intro Precon	ditions		-		×
A d v a n	ABRITES Diag	nostics 34.0 w BMW	ww.abrites.co X6	Keys	EWS4 EWS5 Intro Precon	ditions		-		×
A d v (a n c e d	ABRITES Diag Home	nostics 34.0 w BMW BMW Rect ABPRO	VWW.abrites.co X6 PG program V95256) to	m Keys nmer. o the prog	EWS4 Intro Precon	ditions nd press Nex	t.	_		×
A d v a c e d	ABRITES Diag Home 1. Contr 2. Attac	nostics 34.0 w BMW BMW Heet ABPRO	X6 X6 X6 X6 Y6 PG program Y95256) b	nmer. o the prog	EWS5 Intro Precon	ditions nd press Nex	t.	-		×
A d v v a n c e d	ABRITES Diag Home 1. Conr 2. Attac	nostics 34.0 w BMW Heet ABPRO	x6 X6 DG program M95256) to	nmer. o the prog	Ews4 Intro Precon	ditions ditions	t.	-		
A d v a n c e d	ABRITES Diag Home	nostics 34.0 w BMW	WW.abrites.co X6 Mg program Mg5256) b	nmer. o the prog	EWS4 Intro Precon	ditions nd press Nex	t.	-		×
A d v a ( n c e d	ABRITES Diag Home	nostics 34.0 w BMW	vww.abrites.cc X6 PG program M95256) to	nmer. o the prog	Ewss Intro Precon	ditions nd press Nex	t.			×
A d v a c e d	ABRITES Diag Home	nostics 34.0 w BMW	WW.abrites.cc X6 YG program M95256) b	nmer. o the prog	EWS4 Intro Precon	ditions nd press Nex	t.	-		×
This is what the FEM unit looks like once it is opened. PIN 1 on the EEPROM is marked:



**Note:** If additional keys need to be added in the future, the software won't need to reflash the FEM, so the procedure will be a few steps shorter.

If you re-flash/update it you will have to repeat the procedure.

**Note:** Another option when working with FEM or BDC is to use the ZN057 adapter to make reading/writing of information easier with just soldering the adapter cables directly to the PCB and the eeprom chip. The photos below illustrate how this is done:





BDC Connections and PCB diagram in case you have your BDC unit with software version higher than 85, and you cannot do the procedure via OBDII and the unit needs to be prepared first.





After the procedure with the FEM/BDC unit is done all other functionalities are available in the EWS Functions menu.

- Program Key
- Clear Mileage is a one-click solution
- Save EWS Data is also self-explanatory it lets you save the data into a file locally on your computer
- Restore EWS Data does the opposite it lets you upload a file and write it into the unit
- Erase Key lets you delete a lost key and free-up the key position, so that the key would no longer be functional for the vehicle.
- Virginize prepare the unit into a virgin state, getting rid of immo data and other relevant information, gets it ready for adaptation.

These functionalities would be available for future work on the vehicle, as long as the flash of the FEM/ BDC unit has not been changed or updated. If, for example, you do the whole procedure and program key to a vehicle, and in a few months the same vehicle comes back for another key, or for clear mileage, the EWS Functions Menu would be available without the long procedure, as the unit has already been prepared.

<u> </u>	ABRITES Diagnostics 34.0 www.abrites.com			-	×
< back	Home BMW X6	Keys EWS4 EWS5			 ٢
			Functions		
		I	EWS Functions		
	Select one of the following func	tions :			
	Program Key				
	Clear Milage				
	Save EWS Data				
d v	Restore EWS Data				
<a href="https://www.ac.ac.ac.ac.ac.ac.ac.ac.ac.ac.ac.ac.ac.</td> <td>C Erase Key</td> <td></td> <td></td> <td></td> <td></td>	C Erase Key				
ed	O Virginize				
		Ca	Select		

# 9.3 CAS4 Key Learning (F Series)

Key programming for CAS4 F-Series vehicles is done trough the Keys and Start Synchronization menu > EWS Manager > Program Keys. It is a guided procedure and the software provides all the steps than need to be taken. It is important to follow all the on-screen messages, especially when it comes to working for power supply, or sequences of doing what is asked.

# 9.4 Spare Key Programming for BMW G-Series and F-Series BDC2 Vehicles

Requirements

- AVDI Interface
- ZN095 Cable
- ProTag Programmer
- Spare Key(s)
- ZN051 DS Box (Hardware Revision 2.4 Required)
- Working key

Step of the procedure

Remove the BDC2 Module.

Note: Bench procedure is mandatory before any OBD operation.

- Disconnect the vehicle battery.
- Carefully remove the BDC2 module from the vehicle.
- Detach the plastic covers to expose the module's PCB (Printed Circuit Board).

Below you will see all needed connections:

#### FRONT SIDE



Connect the ZN095 Cable to the BDC2 Module Make the following connections precisely:

- 1. EEPROM Clip  $\rightarrow$  ensure to provide contact with pin 2 of the Eeprom
- 2. Red/Blue cable  $\rightarrow$  PIN 46 / PIN 45 of CON8
- 3. Orange cable  $\rightarrow$  PIN 36 of CON7
- 4. Brown cable  $\rightarrow$  PIN 35 of CON7
- 5. ZN095 main connector → Board-edge connector of the BDC2 PC







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Once all connections are in place: Connect the ZN095 Cable to the ZN051 (DS Box). Ensure DS- Box is HW revision 2.4.

Step 3: BDC2 Reading

- Launch the BMW Online Software.
- Select your vehicle model (G-Series).
- Navigate to Keys & Start Synchronization  $\rightarrow$  Select BDC2.
- Follow all on screen instructions carefully.

**Important**: Do not disconnect power or unplug any device during the procedure.

During the procedure, the software will:

- Prompt you to save \*.NCD Coding files (4 in total).
- Create and name a new folder clearly (e.g., BMW\_G30\_BDC2).
- Save all files in this folder as prompted.
- Ask you to reload the saved coding files before proceeding.

(You should select all 4 files at once.)

When the reading and upload process is complete, reassemble the BDC2 module and return it to the vehicle.

**Note**: Once this step has been completed using the Abrites BMW Online Software, you will be able to program a key via OBDII in the future, even if no keys are currently available.

C ABF	TES Diagnostics	35.2 www.abrit	es.com		- 0 3	×
¢ back	Home	BMW	G070	Keys	AMS valid until 16 May 2030 📲	3
EWS	Manager					
EV Ad	/S Parts aptation					
Syn CA	chronize S & ELV					
IST	l codes					
C	BDC 2					

Step 4: Key Learning

- With the BDC2 module reinstalled, proceed with the key programming via OBD.
- Use the software to:
- Check compatibility of the new key.

Note: Both original and after-market keys are supported.

NB! Second hand original keys can also be used after being reset using the ABPROG.

Wiring diagrams and detailed photos are available in the User Manual and the ABPROG Classic software > NCF >BNW NCF GEN 1/2 > "Show/Hide Connection Diagram" button.

Program the key into a free/available slot.

Note: To complete the procedure, hold the new key against the ring aerial (emergency slot) on the steering column and press the Start/Stop button for approximately 30 seconds to activate the key.

ABRITES Programmer for AVDI 2.15		www.abrites.com		
	NCF		•	BMW NCF GEN2
			_	BMW NCF GEN1
				BMW NCF GENZ
Read	oad			
> i				
Program	ave			
Verify				
Erase				
Set Security Show	w/Hide lection gram			
Exit Se	Starte	d		

# 10. FEM/BDC Adaptation

In order to adapt FEM/BDC unit you need to have it in virgin state. To make the FEM/BDC unit virgin, you need to prepare it first. Once the unit is prepared, go to "Keys And Start Synchronization Menu" and open the "EWS Manager". Once the preparation procedure is complete, you will find the "EWS Functions" Menu > and the Virginize option, which is a one-click solution at that point (after the unit is prepared)

It is highly IMPORTANT to supply 13.6 Volts, or more, so that the procedures can run smoothly and finish successfully. An external power supply is a must. Below you can find all the steps and menus in screen-shots that need to be followed:

This procedure prepares the unit into a state, ready to be programmed - virgin. In this state, the unit does not contain any particular data for a vehicle - no ISN, no immobilizer related data, etc. The virginize procedure can be used from the Keys and Start synchronization menu > EWS Manager Functions > Virginize.

Virginized unit can later be adapted with the use of FEM/BDC Adaptation procedure. Please note that if this process of unit adaptation (with virgin unit) is used, you would need to program key so that the vehicle can start and abe functional. For that, refer to the Program Key procedure.

If you use the "Restore EWS Data" option, the unit will be virginized automatically, before the new data is uploaded.



In order to adapt the unit you need to have it in Virgin state, the procedure is explained above.

The software is very user friendly and made as a wizard (guided) so all you need to do is follow the onscreen messages

There are two situations when FEM/BDC Adaptation is required - of course when you need to replace the unit, here are the two sub-options:

1. When the donor unit is available - in this case if the unit is partially functional, and you are able to read it, you can use the EWS Manager Functions and Save the EWS data with the use of DME/DDE ISN, or with a working key, so that you can save the EWS data of the **original** unit to a file. With that file, the donor unit can now be prepared with the EWS Manager, and than you can use the "Restore EWS Data" option and write the file saved from the original unit into the donor unit. Using this option would make the donor FEM/BDC unit just as the original one, the working keys will be saved, and the car will be ready to start. Restore EWS Data first makes the unit virgin, than writes the back-up file you have chosen

\* If you decide to use the "Save short immo data option" in order to obtain a back-up file, keep in mind that this short immo data does not have everything that is required, and you would have to manually input the ISN, VIN, and unit frequency.

All these steps are described in the corresponding sections.

2. When the donor unit is not available - in this situation you have a car with no FEM/BDC unit, and a donor unit. You would now have to start the EWS Manager procedure (all details available in the corresponding section) and prepare the unit, once ready and the EWS Manager functions are available, Virginize the donor unit. After that the adaptation process goes as follows:

Open Keys and Start Synchronization > EWS Parts Adaptation > FEM/BDC Adaptation. Here you can use the virgin donor unit and adapt it to the vehicle.

N.B. After this procedure, you would have to program key to the vehicle, so that it is functional.

You have to start with the **FEM Virginize** procedure, please refer to the Virginize section for details.

You need to follow the instructions of the software, and once asked, you need to write the ISN and the VIN.







# Program/Reflash the FEM/BDC unit

< Home	BMW	1230			<u>a</u>
Inter Filter				General Diagnostics	
and a	A.0		Arraya	hee	Pada
Coar Faults	(10)		ADM.	PRONT ELECTRONIC POOLE (GATENIN)	164
Pegram 3Ds	[40]		REM .	PROVE ELECTRONIC HODUL (BCOY)	82 tuits
Central Coding Valide Order	941		KDHE	ICHINETRUM(INT BIGS) (CC)	20 faults
Programming	941		-	HEADLINET HERH- (HAMMIN BECKER) HOST ANTEL	ttuts
Minap					
ADRITES					



#### Select [40] FEM FRONT ELECTRIC MODULE (BODY):



ABRITES Dia	prostics 31.6 ww	w.abrites.com		- 0 3
Hame	BPW 1230	Hevel		A 1
			Integration Level	
esc mitice		[22] Red x 45.220	FOM FRONT ELECTRONIC MODUL GATEWRY)	
		[40] [5 mill x 03.29	FOR HIGHT ELECTRONIC MODIL (BODY)	
	I family much	10000 M 00 M 00		
	-septament)	E00.15-01-540		
PATES				

There are two flashes/applications that have to be written to the unit.

The software will automatically select the correct flash/application versions for the unit + coding (if available).

It is also possible to select a different version by clicking on the second flash.

Click on "Update" to start the flashing procedure:

< Home	8PfW 123	) Heel									्रती	0
							Integration Le	vel				
Restricte			04	First v. 4.5.220	10	FRONT ELECTRONIC HOD.	A (GATIONAR)					
			141	Flash x 0.3.29	10	FRONT ELECTRONIC HOEK	A. (800%)					
ABRITES												
						Details: PEM P	RONT ELECTRO	EC MODUL (B	001)			
Close Details			comp		794 804,228,000							
una			funh .		159-100-001-029							
			funh .		1551:004.04.040							
ABRITES												
1-Step(ormen():	P020-15-07-5	00										
I-Seplat):	P020-15-07-2	200										







If a coding for the unit is available it will be also written to the unit:







Now the FEM is re-flashed and it will appear in the diagnostic menu. You could write its original coding from this menu or write a Default coding if you do not have the original one:

🔳 A38	TES Dia	gnostks	31.6 w	nu deites	.com		- o ×
¢	Hone	80100	123D				<u>a</u> 0
Enter Fil	e					General Diagnostics	
\$		Address		Aconyo		here:	hate
One	inda	[20]		PEH		PRONT ELECTRONIC MODUL (SATEMAN)	3 builts
hoge	- 194	[40]		PER	₽	PROVI ELECTRONIC MODIA (ROPY)	75 Saults
Central Vehico	Coding Onder	2400		кочек		KOMEINSTRUMENT BACK (AD)	21 faults
Keys	nning Start	[83]		ни		HEADART HOR (WHINK III OXIV) HOLT HIRTIEL	1 liuts
Guideet	uncione aga						
A 8 R	Tes						

ABRITES Dia	grostics 31.6 www.abrites.com		-	σ	×
< Home	EMW 122D FEM			- 41	۲
	Unit 40: FEM FRONT ELECTRONIC MODUL (BODY)				
Abeters	Production date (deg. north, year)	2245-13			
Live Values	Legitor	Law Corporation			
Fault Codes	Silontifying feature, sortinal westure	10048			
Coding	Control and address	м			
Henry Hanger	Programming data	20.00.00			
Caton Sesion	Clambo sadig when programming	1			
	Serial number	1250501035			
ABRITES					



You have the option either to reset it to defaults or load if from a file: (The original first coding of the unit is saved in

C:\Users\YOURUSERNAME\Documents\ABRITES software for ID 17XXXX\BMW \VINofYourCar.ncd Once the coding file is loaded click on **"Wrire ECU"**:

ABRITES Dia	ignostics	31.6 ww	rw abrite	com							-	σ	×
< Home	844	1230	FEH	Coding								đ	0
							Coding						
Read COJ	TO HAC	ortquate	20					~	-	wise .			
Seve to File	(nergy)	lanaper						~					
Lod from File	DenDtd	Inhibition						¥					
100x 004	ComAda	plarNetwo	non:					~					
	Blimx							~					
Roat to outsuits	Tuffield							~					
MST College	TcHate	397						×					
	Tubringe	ation											
	TcHate	2						~					
	CaMate	,						-					
	Calintop	noter						~					
	Colinteg	ation King L	ocation					~					
	OMeter							~					
	Olintegr	ation						~					
	PwClieri	1						~					
	PwDrive	Bodd						~					
	PwDeive	Rods						~					
	PwMeite	r											
	Pedipil	nogration						~					
	PwDeive	e -						~					
ABRITES	Lorbes	H.						~					



The unit is now coded:



Once the unit is re-flashed and coded you could repeat the FEM/BDC procedure.

You can find simplified coding procedures in the FAST Coding menu:

A ABR	ITES Dia	gnostics	31.6 ww	w.abrites	.com			-	٥	×
۲	Home	BMW	123D	FEM	Coding	FAST Coding			.c00	۲
							FAST Coding			
Close N	lirrors/Wi	ndows/Su	nRoof from	n FOB or C	A					
Tilt pas	senger mi	rror down	when in r	everse gei	ar					
Disable	headlight	s washers								
Start ca	r without	holding o	lutch/brak	B						
Close v	vindows, s	sunroof &	mirror fro	m key fob						
Automa	itically unf	fold mirro	rs at low s	peed						
Turn of	f MMI who	en door is	opened							
Turn or	n brake fo	rce flashir	ng with har	d breaking	9					
Turn of	f amber si	ide-marke	rs next to	headlight						
Ambien	t lightning	g controlle	ed indepen	dent from	dimmer sw	itch				
Illumin	ate exterio	or door ha	ndle LEDs	when in n	everse					
Set high	h-beam as	isistant au	to-on							
Disable	headlight	s washers								
Electron	nics off wh	hen door	opened							
Fog lig	nts stay or	n with hig	h-beams							
Turn of	f front wir	ndow roll-	up door in	terrupt						

# 10.1 Save EWS Data (Immobilizer data backup) for FEM/BDC/CAS4

This option is intended for saving a backup of all immobilizer data of FEM/BDC/ units. In order to read the immobilizer data you need to "prepare/unlock" the unit first, which means you have to start the EWS Manager procedure.

This option is useful when adapting used FEM/BDC /units - the backup file read from the original unit contains all immobilizer data (incl. VIN, information about the keys, frequency type, etc) which can be transferred to the new unit (from donor vehicle). Once the data is transferred, it won't be necessary to adapt the unit or to program new keys. Using this method of adaptation, you will be able to order a key for this vehicle from the dealer, as the donor unit works as the original.

Here are steps:

- "Prepare/unlock" the original FEM/BDC/ (from host vehicle) unit by starting the procedure (Keys and Start synchronization > EWS Manager)
- Once the unit is "prepared/unlocked" you have to select the "Save EWS Data" option from the EWS Functions menu. (Continue on next page)

3. You have a few options to save the immo data from this module:

- DME/DDE ISN if you have the ISN you can manually write it and continue with saving the data to a file, which can later be used to restore the module.
- Working Key if you have a working key of the vehicle, you can now use it so that the procedure continues and you save the data to a file, which can later be used to restore the module.
- Save short immo data this option would save a file, which would not be useful for full module adaptation or restore.

\*If you want to use this file for further module adaptation, it does not have the complete immo data of the car, and you would need the ISN.

4. Save the Immobilizer data backup.

5. "Prepare/unlock" the new FEM/BDC/CAS4 (from donor vehicle) unit by starting the EWS Manager (Keys and Start synchronization > EWS Manager)

6. Once the unit is "prepared/unlocked" you have to select the "Restore EWS Data" option from the EWS Functions menu.

<u> </u>	BRITES Diagnostics 34.0 www.abrites.com		-		×
¢ back	Home BMW X6 Keys	EWS4 EWS5		DOO	٢
		Functions			
		Preconditions			
	To save EWS data, you need one of the	e following :			
	OME/DDE ISN				
	O Working Key				
A	O Save short immo data				
v (a					
c					
d					
	G	ancel Next			

# 11.8HP/6HP EGS Adaptation

# 11.1 E-series EGS (TCU) adaptation

6HP EGS Adaptation procedure The **6HP EGS** in the **E-series** is synchronized with the CAS only. The adaptation procedure is a guided procedure which has to be performed from the following menu:

Keys and start synchronization > ISN codes> ISN in EGS .

The software will require to insert the ISN of the DME or to insert a working key in the PROTAG programmer to finish the adaptation procedure. Here are some screenshots from the procedure.









# 11.2 ZF 8HP EGS Adaptation procedure

The ZF 8HP EGS in the E-series is synchronized with the DME/DDE only.

It is not an automatic procedure and the DME of the donor car is required (or a dump from it).

The procedure is the following:

1. Take the DME/DDE of the donor car, connect to it in Boot mode, open the Boot mode function of the BMW/Mini Online software and read it(described in chapter 3.2.5.2)

2. Once the DME/DDE is read click on "Advanced info" and copy the EGS ISN.

3. Read the original DME/DDE in boot mode, click on "Advanced Info" and set/paste the EGS ISN you've copied from the DME/DDE of the donor car.

If you have a dump from the DME/DDE of the donor car you could skip step 1, open the Boot mode function, Load the dump and click on "Advanced info".

Another way to adapt it would be to get both DME/DDE and EGS from the donor car and adapt the DME/ DDE only (as the EGS is synchronized with the DME/DDE only).

#### F-Series EGS (TCU) adaptation

6HP EGS Adaptation procedure - the adaptation of a 6HP EGS in the F-Series is currently not supported.

8HP EGS Reset and Adaptation procedure

The **ZF 8HP** gearbox EGS in the **F-Series** can be reset to a virgin state and can be easily adapted. Procedure is executed in the vehicle by OBDII.

Go to Keys and Start Synchronization, open the EWS Parts Adaptation Menu > 8HP EGS EWS Reset

Make sure that external power supply is connected to the car and the supplied voltage does not drop below 13.6V. The replacement EGS needs to be installed in the car and the IGN turned on.

Please make sure you follow all the steps and on-screen messages strictly, the procedure is guided, at the end the software will ask you to turn IGN ON and wait for 2 min, than turn IGN OFF and wait for 2 min, and repeat this process 5 times - make sure you keep an eye on the messages and execute what is asked.

ABRITES Diagnostics 34.2 www.abrites.com	-		×
K Home BMW F010 Keys EWS Parts Adaptation		.oOO	٩
EWS Parts Adaptation			
8HP EGS Reset			
Ensure that following conditions are met:			
<ol> <li>Please make sure that the suppled voltage does not drop below 13.6 V.</li> <li>External power supply is connected to the Car</li> </ol>			
3. The replacement EGS is connected and ignition is turned "On"			
On the next step EGS will be programmed.			
			- 1
cancel next			
		_	

# 11.3 ZF 8HP EGS Reset by dump - ECU Programming Tool

In some cases the EGS reset and adaptation might not be possible via OBDII, but we have a solution for that too. The EGS reset (make virgin) procedure can be done on bench, using the ZN079 cable set and the ECU Programming Tool. Please refer to the "**ZF 8HP Virgin - Adapt for BMW**" section of the ECU **Programming tool User Manual** for all details on how to reset the EGS by dump.

#### ZF 8HP BMW Make Virgin with ECU Prog

- 1. Read the ZF 8HP unit's Data Flash with the ECU Programming tool and the ZN079 cable set and save the data to a file.
- 2. Load the file in the Dump tool
- 3. Press the "Virginize" button this will create a new file that you need to save again.
- 4. Go back and write the file to the unit

Now the EGS is in a virgin state, you can install it into the vehicle to proceed with adaptation.

**ZF 8HP adaptation** (if the unit is virgin): (Procedure is executed in the vehicle)

Once you have the "virgin" EGS unit installed into the vehicle, you need to complete the following steps in order to adapt it:

- 1. Turn IGN ON wait for 2 min.
- 2. Turn IGN OFF wait for 2 min
- 3. Repeat 5 times

In other words, you need to turn Ignition On for 2 minutes, than turn Ignition Off for 2 minute, than IGN ON for 2 min, IGN OFF for 2 min until you repeat ON and OFF 5 times each, which should make the procedure 20 minutes long.

# 12. ISN reading

The individual serial number is a mechanism to bind the modules to one specific car and prevent reusing modules from another car. The ISN of the DME is also needed data for key learning when all keys are lost.

ISN reading from DME. We currently support DMEs for diesel and gasoline E series vehicles as well as DMEs for gasoline F series vehicles. In case of a problem with a specific DME, our team analyzes the problem at hand from the Online logs and may add support to that motor computer dynamically on our server. The customer just has to repeat the operation without reinstalling anything. Some specific motor computers like MSV80/MSD80 are more complicated for ISN reading and require flash preprocessing to retrieve its data.

ISN reading from CAS - supported are both the short 4B ISN (that is used by older motor computers and some automatic gear shaft) as well as the 16byte ISN that is used for authentication with most up to date motor computers.

Recent CAS3 versions keep the ISNs encrypted in their EEPROM and decrypt it before authentication of the DME. The Abrites software for BMW generation 2 allows the user to encrypt the ISN for these CAS3 versions.

ISN reading from EGS - reading of the ISN from the Electronic Gear Shaft allows replacement and adaptation of used EGS from one vehicle to another.

Synchronization status - quick view of the synchronization status between DME and CAS which allows quick troubleshooting of starting problems.

In this view the user can see the details in regards to the ISN codes after the reading is completed.

C ABRITES Diag	ostics 34.0 www.abrites.	com			-	o x
K Home	BMW M550D	Keys IS	5N			<b></b> ] 🗇
			ISN Individual Seria	al Numbers		
ISN in DME	DDE7: 🎜 39 7	7 69 <b>63</b> AB 513	6F <b>#</b> 98 23	D-9 A3 824 09 289		
ISN in CAS (4B)	CAS:					
ISN in CAS (16B)	CAS:					
ISN in EGS	EGS 8HP: E6 20	B3 EC 27 F2	FA 08 10 E4	CF E6 3C 93 C2	48	
DME-EWS sync status	Status: N/A					
Encrypt CAS ISNs						
ABRITES			Done			

Once again the software will ask you to ensure that the external power supply is connected when a ME/ DDE programming is required for the ISN reading:

ABRITES Diagnostics 31.6 www.abrites.com	- 8 ×
4         Home         BMW         E90         Keys         ISN	- 100a
Is CAS or DME Replaced	
No 😡	Yes
ABRITES Diagnostics 31.6 www.abrites.com	- 6
C Home BMW E90 Keys ISN MSD	2 <b>11</b> 0 <sub>0</sub>
About to program DME for	ISN reading
Maka awa yau haya a	tto ale ad
Make sure you have a	ttached
external nower su	nnlv
Press and hold START to r	begin
or BACK from the toolbar to	cancel
START	
teps	

The Start button needs to be pressed and held down as an additional safety precaution. The other buttons in the keys menu will allow for the synchronization of the CAS, DME and other modules where it is needed during and after key learning.

IMPORTANT: The ISN of MSD/MSV ECUs needs to be read on bench using a direct connection without DS Box (Keys&Start synchronization > ISN codes > ISN in DME) \*MSV80 could be read through the OBD port of the car only. Once the DFLASH is read you have to click on the "Advanced info" option and you will find the ISN of the DME/DDE, the ISN of the EGS and the operating hours of the DME/DDE.

You have the options to copy the ISNs, change them and reset the operating hours of the DME/DDE (once a certain value is reached you won't be able to write any coding to the ECU and this counter has to be reset.)

Home	BMW BootMode																
er Filter								Boot	Mode								
Load	EDC17C50 - B F1 AS	DC 78 15 x		Read 1	PROT Password					Read DFLASH					Read PFLASH		
Save				Read TF	ROT12 Passwor	d				Write DFLASH					Write PFL/6H		
Open Image	0000	01	00	44	F9	99	0E	00	00	00	00	00	00	00	00	00	32
dvanced Info	0010	36	2D	30	37	2D	31	34	00	00	00	32	38	2D	30	37	2D
3	0020	31	34	08	10	12	42	04	30	28	07	14	14	52	46	31	30
	0030	33	37	35	33	36	35	38	33	10	01	2F	2F	00	00	00	00
	0040	00	90	07	Time Li	nit 15126 sec	Reset				×	00	00	00	00	00	00
	0050	00	00	00	ISN		neset					00	00	00	00	00	00
	0060	00	00	00	23 FGS 1	CF 74 26 9F	4B 5D BC 27 1	D 3A 8D AA 0	C 49 29	SET IS	N	00	00	00	00	00	00
	0070	00	00	00	55	E8 D6 73 O	C DB 5C CC F0	54 F5 4D 03 9	E F0 C7	SET IS	N	00	00	11	AA	C9	A0
	0080	02	00	D5				~~	••	~~		04	00	04	00	00	00
	0090	18	11	06	<b>8</b> A	30	39	01	00	00	01	23	00	00	00	30	30
	00A0	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	01
	00B0	01	00	04	14	09	16	8D	03	F2	01	00	00	06	33	00	00
	00C0	01	00	00	0A	09	01	06	02	06	00	00	0A	0A	06	18	00
	00D0	08	00	00	0A	0B	69	15	03	08	00	00	28	91	69	15	98

# 13. ECU Wiring diagrams

Some BMW ECUs need to be read on bench in boot mode which requires the units to be opened. Others do not require boot mode reading and can be easily wired on bench using the ZN051 Distribution Box. Below are displayed some of the ECU types with their wiring diagrams.

# 13.1. MSD80/MSD81



### 13.2 MSD85/MSD87

MODUL 5	MODUL 4	MODUL 3	MODUL 2	MODUL1
	\$0000000000000000000000000000000000000			
		9 0 0 0 0 0 0 0 16 		-
	3900000046 3 4 470000054	25000032. 3300000000040		
Yallow - B+ (1297) Black - GND (Ground) Red - CAN HI Blue - CAN LOW	automo	otive sol	utions	

# 13.3 MSV90



# 13.4 MEVD 17.2.9

Working with MEVD17.2.9 requires the ECU to be wired differently when reading the TPROT password and DFlash. Reading the TPROT password can be done with connecting T1,T2, CH and CL using the diagram below:



Τ4 Τ5 Т6 \*0 0 % Τ1 \* 0 0 0 0 T ~[] 0-~ [] 0-Yallow - B+ (22V) Black - GND (Ground) Red - CAN HI Blue - CAN LOW automotive solutions A·B·R·I·T·E·S

DFlash can be read while connecting the BOOT PIN:

# 14. Mileage Information

The ability to view the mileage data is available for viewing using the mileage function of the software. In some cases the counters can be calibrated via the Abrites diagnostics for BMW/Mini generation 2 but only for module replacement purposes and only according to local regulations. Some BMW models may have an incremental EEPROM that won't allow the user to change the odometer values by OBDII. In such cases it is needed to take out the cluster, read its EEPROM with a programmer and reset it (delete the first two rows of the EEPROM). Once the mileage in the cluster is reset, the cluster will take the odometer values from the unit that holds the highest value.

### 14.1 FEM/BDC Clear Mileage

The unit needs to be prepared as described above. Clear Mileage option is found in the "Keys And Start Synchronization Menu" and the "EWS Manager", "EWS Functions" Menu > and the Clear Mileage option, which is a one-click solution at that point.

It is highly IMPORTANT to supply 13.6 Volts, or more, so that the procedures can run smoothly and finish successfully. An external power supply is a must.

C ABRITES Diag	gnostics 3	4.0 www.ab	rites.com					-		×
K Home	BM	1W M5	50D M	lileage					.a00	٢
					Milea	ge information				
Road Vahida	Address	Name			Mileage		Stored			_
	[12]	DME			186570		0			^
	[18]	EGS			186576		183819	clear		
	[40]	CAS			55526		0			
	[60]	DKOMBI			186598		186577	clear		
	[64]	PDC			186577		181949	clear		
	[72]	FRM			139140		184819	clear		
	[0]	JBBF			0		184819	clear		
	[1]	ACSM			0		184819	clear		
	[10]	ZGW2			0		186577	clear		
	[19]	LMV_FR			0		186573	clear		
	[1c]	ICM			0		186517	clear		
	[21]	FRR			0		181769	clear		
	[2a]	EMF			0		184819	clear		
ABRITES	[3d]	HUD			0		180591	clear		~

# 15. ECU Tool

ECU Tool is a very useful functionality for extracting ISN from the DME/DDE of BMW vehicles. The procedure works by OBDII and by dump. Once the software is started you have the option to check the ECU, and read it by OBDII, it is a very quick process, and once the data flash is read, the software displays the ISN Codes. Screenshots from the procedure below:

ABRITES Diag	nostics 34.0	www	/.abrit	tes.co	m														-	-		×
K Home	BMW		M550	DD	EC	Ј ТОС	L														OO	0
											Εсι	ı To	ol									
Check Save File Load File Info View	0000 0010 0020 0030 0040 0050 0060 0070 0080	0 01 30 31 33 00 00 00 00 00 02	1 00 2D 33 37 86 00 00 00 00	2 06 30 08 35 18 00 00 00 AF	3 EE 37 10 33 10 00 00 00 E9	4 85 2D 12 32 94 00 00 00 1F	5 2D 31 55 33 45 00 00 00 2E	6 00 33 00 37 00 00 00 00	7 00 40 33 00 00 00 00	8 00 02 10 00 00 00 04 03	9 00 08 01 00 00 00 00 00 L	A 00 30 13 2F 00 00 00 00 00 00 00 00 00	B 00 32 00 2F 00 00 00 00	C 00 2D 13 00 00 00 AA 07	D 00 30 31 00 00 00 00 A9 00	E 00 38 31 00 00 00 90 00	F 33 2D 30 00 00 00 7D 00	0 1 2 	345; îĦ- 7-1: □□U 323: □ E  é□.	6789 3 .@ [ 73]	9ABCD	EF .3 8- 10    }
Read Data Flash Write Data Flash	Control Checkin ECU ST CAFD : SWFL : SWFL : BTLD : Reading Process	g EC ATU cafd swfl swfl btld_ finis	it a U re   <b>S :</b>  _00  _00  _000  _000  _000  _000	adir Prep 000 000 002 0007 ash with	ness bare 1a7. 76c. 3f5.l '6b.l Star	: 18 d caf.( bin.( bin.( bin.( ted. cces	000_ 070_ 070_ 006_ s	_018 _023 _023 _024	_00 _00 _00	4 0 1												5702

🗌 AB	BRITES Diag	nostics 34.0 w	ww.abrites.co	m														-		×
<b>∢</b> back	Home	BMW	M550D	ECU TOOL															.a00	٢
									Ecu	То	ol									
	Check	Name		Value																
		8HP EGS ISN	:	E6 🎊	B3	EC	27		FA	08	18	E4	CF	E6	3C	93	62	48		
		DME/DDE IS	N:	1B 🔅	77	69	¢¢	AB	53	6F	9A	95	23	D9	A3	81	۲	E0		
Sa	ave File	Mileage:		6096248															Mod	lify
Lo	oad File																			
He	ex View								10	nac										
		10010191	ing icatu	c, conu	vi u					93 910	00									
Deed	Data Flash	Control-L	init addr	ess : 18																
Redu		Checking I	ECU readir	ness.																
Write	Data Flash	CAFD : ca	fd_00000	la7.caf.0	00_	018_	_004	ł												
		SWFL : S	wfl_00000	76c.bin.0 3f5 bin 0	70_ 70_0	023_ 123	000													
		BTLD : bt	Id_000007	6b.bin.0	06_0	)24_	000													
		Reading D	ata Flash	Started.																
		Process fir	hished wit	h success																
A·B·	RITES																			STOP

# **16. Guided Functions**

### 16.1 Reset FRM Short Circuit Counter

The Abrites Diagnostics for BMW/Mini has added an option to **reset the FRM short circuit counter**. The function can be accessed when opening the **"Guided functions"** menu:

ABRITES D	iagnostics 31.6	www.abrites.co	om		×
< Home	BMW E70	Guided Functions			٢
			Guided Functions		
Service Intervals			DPF Regeneration		
Transport Mode			DPF Register Replacement		
			Injectors Calibration		
			Reset FRM short circuit counter		
			Adjust Starting Torque		
			Smooth Running Control DDE		
			EGS Reset Adaptation 8HP		
			EGS Reset Adaptation 6HP		
			Parking brake Workshop mode		
			8HP Transmission control unit Standstill adaption		
ABRITES					

Once the **"Reset FRM short circuit counter"** button is clicked, a procedure will start, checking all of the modules for short circuit faults. As soon as the faults are cleared, only the ones that need to be repaired will be left.

### 16.2 Service Intervals

When performing services on a vehicle these services need to be checked in the vehicle's history. In order to do so the customer can use the Abrites diagnostics for BMW/Mini generation 2 and the service interval option:

ABRITES Diagnostics 31.6 w	ww.abrites.com					- 0 ×
K Home BMW E90	Guided CBS					
	Available (%):	Counters:	Remaining (km):	Month:	Year:	
Engine oil	99	-3	22720	N/A ~	N/A ~	OK
Front brake pads	29	-3	7290	N/A ~	N/A ~	OK
Rear brake pads	82	-3	N/A	N/A 🛩	N/A ~	ОК
## **17. Best Practice Advice and Additional Information**

#### 17.1 ISN reading from DME

Often times BMW vehicles are harder to work with than other makes. For example in the cases where the car has no working key or the DME needs to be replaced with a second hand unit the Individual Serial Number (ISN) needs to be read. This task is made harder by the vehicles because they have the tendency to "fall asleep" constantly. This causes the Abrites diagnostics for BMW to appear "stuck" in one place – seemingly nothing happens. What needs to happen is to make sure that the car does not fall asleep during our work with it. There are two ways of doing this.

The first option is to constantly turn the lights on and off, click the locking and other buttons. In most cases this, combined with having a constant feed of 14V external power supply to the vehicle should be sufficient for us to read the ISN.

The next step, in case the above does not help is to make a temporary transponder in order to keep the car awake. To do this you need to read the ISN from the CAS module and program it to a blank transponder, place this blank transponder in an empty BMW key box. When you try to start the car with this transponder – it will not start, it will only crank. This is not important because the car will be awake, as if the ignition is ON. This will allow you to read the ISN easily.

An alternative is to shorten pins 1 and 16 on the OBD II connector, but unfortunately not all cars can have this method applied to keep it awake.

Below you can see a sample of what a DIY DB25 ignition shortener looks like. It basically shortens PINs 1 and 16 on the OBD, where the DB25 shorts PINs 2 and 17.





To proceed with making the temporary transponder, you can follow these steps:

1. Read the ISN from the CAS and write it down.

2. When you enter the **"Cas Keys"**, please **save the keys in a file as a backup.** 

3. In **"Cas Keys"** on **position 9** (last position), write the **last byte** from the config as **"00"** (zero zero) and **write it into the CAS -** (using the **"Write CAS EEPROM"** button)

4. Please proceed with programming a transponder on any free position and when asked for an ISN, please **enter the one from the CAS**.

5. After this is done, as soon as you **turn the IGN** on with this transponder, the car should wake up and the dash will light on.

6. Read the **ISN from the ECU** and the re-flashing procedure will continue and you will be able to read the ISN - write it down somewhere.

7. Delete the temporary transponder with clicking "Clear Key and CAS", while having the transponder placed into the programmer.

8. After you obtain the ISN from the ECU, revert the last byte of the config to position 9 (how it was before) and write the CAS (using the "Write CAS EEPROM" button), or it is easier to click on "Load from File" and choose the file you wrote earlier. Then, click on "Write CAS EEPROM"

9 Once this is done, you can program a new key and when asked for ISN, please **enter the one you read from the ECU.** 

**Note:** If the CAS has 4 bytes ISN you will need to write the last two bytes at step 4.

Note: If the PCF is either 7942 or 7944 it is not necessary to renew it before programming.

### 17.2 FEM/BDC Troubleshooting + Coding

Should you receive an error message during one of the FEM/BDC procedure you should restore the FEM to its original state.

The procedure will fail only when the conditions are not met and the unit will remain in a boot loader state and the FEM/BDC will disappear from the main diagnostic menu.

It is very important to strictly follow all steps from the on-screen messages step by step and supply the car with a constant 13.6 Volts or more so that the procedures can run smoothly and finish successfully. When the software tells you to disconnect the AVDI from the OBDII and then remove the car battery it is very important to do that in that order.

It is also very important to NOT disconnect the AVDI from the USB port of your PC during the procedure.

#### FEM/BDC Restore procedure:

All you need to do is reflash the FEM/BDC (Module 40 FEM Body) from the **"Programming"** menu and then write its coding from the diagnostics menu(Module 40 FEM) which is being saved automatically during one the FEM/BDC procedures in the following folder:

C:\Users\YOURUSERNAME\Documents\ABRITES software for ID 17XXXX\BMW\VINofYourCar.ncd

#### 17.3 ISN Encrypting

Whenever you exchange a broken ECU or handle an all keys lost situation you need to read the ISN from the DME.

When you exchange the DME/DDE – you have to write this DME ISN to the CAS.

There are two CAS types :

1. CAS unit without encryption - in this case you need to read the ISN of the DME/DDE and write it in the CAS ISN field by copy-paste it followed by click on the pencil icon on the right hand side.

2. CAS unit with encryption - in this case you need to read the ISN if the DME/DDE, write it in the CAS ISN field by copy-paste it followed by click on the pencil icon on the right hand side and click on Encrypt CAS ISNs.

It is recommended to Synchronize the CAS with the DME from "Keys and start synchronization > Synchronize CAS&DME " and disconnect the car battery for 1 minute.

#### 17.4 EWS Tampering DTC

Often times during key learning the CAS receives the EWS tampering error. This error causes the car to become immobile. The way to fix this issue is to take the keys out of the car (2 meters or 6ft is a preferable). Disconnect the battery for about 20 minutes and re-connect it without bringing the keys back into the car. Try to communicate and clear the DTC. You can turn the lights on and off, lock and unlock the car, the DTC will get cleared. Then try to sync CAS EGS and then bring the keys inside the car and sync again. The tampering error should disappear and the car should start. This may need to be repeated many times but this is the only way to work with the vehicles.

#### 17.5 FSC Codes Reading

Abrites diagnostics for BMW Online provides the ability to extract and update FSC codes and maps for both E series and F-Series vehicles.

Using this function you can update the maps on the navigational units. This includes the CIC modules as well as the so called NBT navigational units.

ABRITES Diag	nostics 34.0 www.abrites.com	-		×
K Home	BMW M550D HU_NBT FSC		.c00	٢
Enter Filter	FSC code generator			
Generate from JMP file Generate	Available maps: Road Map Europe PREMIUM 2008-1			
	Road Map Europe PREMIUM 2008-2			
	Road Map Europe PREMIUM 2009-1			
	Road Map Europe PREMIUM 2009-2			
	Road Map Europe PREMIUM 2010			
	Road Map Europe PREMIUM 2010.			
	Road Map Europe PREMIUM 2011			
	Road Map Europe PREMIUM 2011i			
	Road Map Europe PREMIUM 2012			
	Road Map Europe PREMIUM 2013			
	Road Map Europe PREMIUM 2013-2			
	Road Map Europe PREMIUM 2014-1			
	Road Map Europe PREMIUM 2014-2			
	Road Map Europe East PREMIUM 2016-2			

#### 17.6 Using Abrites diagnostics for BMW Online with PROTAG

The Abrites PROTAG programmer ZN002 and the new ZN003 versions can now be used together with the Abrites diagnostics for BMW Online.



#### 17.7 Downgrading or ISN reading stops at 10%

When you encounter this issue this means only one of two things – DME is not supported (check ISN support matrix on the abrites.com website) or alternatively the car is "falling asleep" in which case you should keep it awake as per one of the ways above.

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#### 17.8 Key Learning by Dump - EWS and CAS keys

Key for older generation BMW models equipped with EWS or CAS can be prepared by dump.

EWS or CAS unit is read with a programmer and the saved file can be uploaded into the Tag Key Tool (TagKey tool > Key Tool > Vehicle models drop down menu).

Here are the options we have for key learning by dump:

- BMW ALL BIKES. ECU Bosch M58BW0160. PCF7936
- BMW EWS1. PCF7935
- BMW EWS2. PCF7935
- BMW EWS3. 68HC911EA9. PCF7935 or EML
- BMW EWS4. PCF7935 or EML
- BMW CAS1. PCF7936 or remote key.
- BMW CAS2. PCF7936 or remote key.
- BMW CAS3. PCF7936 or remote key.
- BMW CAS4 Series 1 F20 (2011-). PCF7939 or remote key.
- BMW CAS4 Series 5 F10/F11 (2010-). PCF7939 or remote key.
- BMW CAS4 Series 5 GT F07 (2010-). PCF7939 or remote key.
- BMW CAS4 Series 6 F12/F13 (2011-). PCF7939 or remote key.
- BMW CAS4 Series 7 F0x (2008-). PCF7939 or remote key.
- BMW CAS4 Series X1 (2010-). PCF7939 or remote key.
- BMW CAS4 Series X3 F25 (2011-). PCF7939 or remote key.
- BMW CAS4 with XEP100 MCU (5M48H mask). PCF7939 or remote key.

Further information in the User Manual for Tag Key Tool, p. 32