SUPERVISOR: Mr. ANTONIOLI Bruno – Sistemi ed Impianti Elettrici ed Elettronici – Sperimentazione Sistemi Elettronici – Tel:683.4766

MANAGER: Mr. REMOLIF Luca – Sistemi ed Impianti Elettrici ed Elettronici – Sperimentazione Sistemi Elettronici – Tel. 683.1194

USERS:

RSC/RPA – Funzioni Veicolo e Motopropulsore

Assistenza Tecnica – Diagnosi

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SATIZ Normazione

PURPOSE

This document describes the Fiat standards for communication protocol standard 9141 implementation, defining the general rules.

Change	Date	Description
=	July. '99	Edition 1 - New

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Contents

1. OBJECT

This document describes how Fiat foresees to implement the communication protocol standard 9141 in its products, defining the general rules.

All the values depending strictly from a single ECU will not be assigned in this document and will be indicated as TBD.

The document “Diagnostic Protocol Standard Fiat 9141” shall be used as a model for the definition of all diagnostic services. Using this document as reference, a specific document called “Finalised Diagnosis Standard” shall be written for each ECU.

2. REFERENCE DOCUMENTS

The documents used for reference are listed below.

/1/ ISO 9141Road vehicles -- Diagnostic systems -- Requirements for interchange of digital information

3.
COMMUNICATION

3.1.
Initialization lines configuration

3.1.1.
Used lines

The possible configurations are the following:

- ISO 5 :configuration with bidirectional K line used either for initialization and for communication and reference G line.

- ISO 8 : configuration with bidirectional K line , L line toward ECU used for initialization only and reference G line.

Starting from year 1997 vehicle models the modality ISO 5 shall be used

Electric characteristics and signal time schedules must be in compliance with standards ISO 9141 and FIAT 07234.

3.1.2.
Initialization

Initialization should be possible with engine stopped or running (at any running speed) and if possible at any vehicle speed. in the event where the talk start implies the system functional deactivation, the failure warning lamp lighting must be foreseen.
Initialization should occur by addressing to 5 baud ± 2% , and byte structure is the following:

- Start Bit ("0") : No. 1
- Datum Bit : No. 7
- Odd parity Bit : No. 1
- Stop Bit ("1") : No. 1

Address is differentiated by system type and should be requested to FIAT(DT-SIEE-S-SSE) from the electronic system supplier.

3.1.3.
ISO Code

Following transmission from Tester of the address to 5 baud, the trigger box answers with the ISO code made by 6 bytes transmitted with a baud rate of 4800 ± 2 % . The byte structure is the following:

- Start Bit ("0") : No. 1
- Datum Bit : No. 7
- Odd parity Bit : No. 1 (*)
- Stop Bit ("1") : No. 1

(*)The parity bit of the first byte is with even parity.

The byte significance in the ISO code interior is the following:

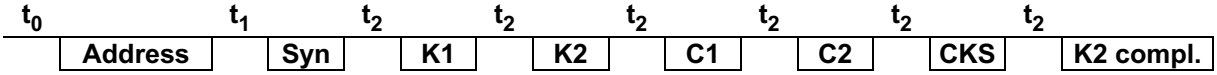
byte 1	synchronism (55 h)
byte 2 e 3	trigger box family
byte 4 e 5	diagnosis differences within the same family
byte 6	preceding byte checksum

In the following table the ISO codes relevant to each application are illustrated:

Syn	K1	K2	C1	C2	CKS	Application
55H	H	H	H	H	H	**Vehicle 1**
55H	H	H	H	H	H	**Vehicle 2**

After introduction reception it is forecast an acknowledge from F/L Tester to ECU, corresponding to the complement to the third byte of the introduction (Key 2).In the event where this byte is received in a wrong way from trigger box, the talk must be retaken with transmission from Tester of the 5 baud address (after a time t0).

3.1.4.
Initialization time schedule diagram



	Minimum (ms)	Typical (ms)	Maximum (ms)
- Elapsed time before initialization	2000	2000	**###**
- Elapsed time between initialization and introduction	2	2	1000
- Elapsed time between byte and introduction	2	2	40

3.2.
Communication

3.2.1.
Communication parameters

The transmission logic is **positive**.
The datum coding happens in **NRZ**, and the baud rate is equal to **4800** baud with an admitted tolerance of ± **2 %**.

Each byte is so structured:

- Start Bit ("0") : No. 1
- Datum Bit : No. 8
- Stop Bit ("1") : No. 1

3.2.2.
Block structure

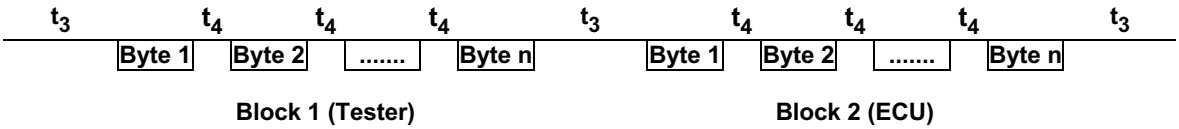
The communication happens in a bidirectional way (master slave) on K line. Datum are exchanged by means of byte blocks structured as follows:

- Frame length (1 byte):	**Following byte number (max 31)**
- Frame title (1 byte)	**Transmission type**
- Information.	**0 ≤ n ≤ 29**
- Checksum (1 byte)	**Sum of preceding byte**

Any information exceeding the maximum length is transmitted on more consecutive blocks spaced by Acknowledge blocks from tester side according to the following scheme:

ECU	TESTER
	### Request block
Answer block 1 **###**	
	### Acknowledge block
Answer block 2 **###**	
	### Acknowledge block
..... **###**	
	### .....
Block No.**###**	
	### Acknowledge block
Acknowledge block **###**	

3.2.3.
Protocol time schedule diagram



	Minimum (ms)	Typical (ms)	Maximum (ms)
- Retard time between subsequent byte in a block	2	2	40
- Time among blocks	2	2	500
- Max byte No. present in a block (excluding title, length and checksum)	0	/	29
- Communication time-out		500	

3.2.4.
Protocol structure

Following complemented key 2 the communication proceeds with transmission from trigger box of the identification code.

Starting from this moment the talk must be kept active by means of request/answer frame exchange or, more simply, by acknowledge frame exchange.

In the event where communication errors are present the trigger box behaviour must be the following:

- if within the time **t3** the tester block is not received or if, within such block, the following byte is not received within time **t4**, the trigger box must end the diagnostic talk and reset itself to receive again the 5 baud code;

- if the received title block is wrong, the trigger box should transmit the block “Unknown title / unpracticable function” (0B H);

- if datum errors are present (start bit, stop bit, block checksum) the trigger box should transmit the block of “No acknowledge”;

- in the event where the trigger box is not able to recognise the diagnosis plug it must end the diagnostic talk and reset itself to receive again the 5 baud code;

As far as the tester is concerned, if within the time **t3** the block from trigger box is not received or if, within such block, the following byte is not received within the time **t4** the tester can transmit again the last request for three consecutive times, after that the talk must be activated again.

3.2.5.
Diagnostic talk end

The diagnostic talk ends for one of the following reasons:

- the tester sends the Diagnosis End block
- the timeout time has been exceeded

In the event where the request to end communication arrives during system components activation (Active Diagnosis), the automatic deactivation of the aforementioned should be foreseen.

3.2.6.
List of titles accepted by E.C.U.

The titles accepted by the trigger box are described below:

Block description	Request (Hex)	Answer (Hex)
IDENTIFICATION CODE READING REQUEST (U:I.D.)	00 H	F6 H
RAM CELLS READING REQUEST	01 H	FE H
RAM CELLS WRITING REQUEST	02 H	ED H
EEPROM READING REQUEST	03 H	FD H
ERROR MEMORY READING REQUEST	07 H	FC H
ADC CHANNEL READING REQUEST	08 H	FB H
PARAMETERS READING REQUEST	10 H	EC H
PARAMETERS WRITING REQUEST	11 H	EB H
SNAPSHOT REQUEST	12 H	F4 H
LOGIN	18 H	F0 H
EEPROM READING REQUEST	19 H	EF H
EEPROM WRITING REQUEST	1A H	F9 H
DOWNLOAD REQUEST	1E H	F7 H
DOWNLOAD TRANSFER	1F H	09 H
SAFETY CODE TRANSMISSION (engine trigger boxes only)	20 H	09 H
ACKNOWLEDGE	09 H	**(*)**
NO ACKNOWLEDGE (from tester)	0A H	Previous title
NO ACKNOWLEDGE (from ECU)	Wrong title	0A H
UNKNOWN TITLE / UNPRACTICABLE FUNCTION	**(*)**	0B H
DIAGNOSIS END	06 H	-- **(**)**
MEMORY ERROR DELETE REQUEST	05 H	09 H
ACTUATOR ACTIVATION	04 H	09 H
ACTUATOR ACTIVATION WITH FEEDBACK	17 H	E8 H

(*)Variable
(**)No answer

3.2.7.
Block description

3.2.7.1.
Identification code reading description

Request:

Byte No.	MEANING	CODE
1	Block length	02 H
2	Title	00 H
3	Checksum	02 H

Answer:

Byte No.	MEANING	CODE
1	Block length	N-1
2	Title	F6 H
3	Ascii code	xx H
....	....	....
N-1	Ascii code	xx H
N	Checksum	xx H

The identification code must be made of the following parameters:

Information	Lenght
Software version	TBD
Hardware version	TBD
FIAT Drawing	9 byte
Week	2 byte
Fabrication year	2 byte

3.2.7.2.
RAM Cell reading description

Request:

Byte No.	MEANING	CODE
1	Block length	05 H
2	Title	01 H
3	No. of requested RAM Cells	xx H
4	Initial address of requested cells (H)	xx H
5	Initial address of requested cells (L)	xx H
6	Checksum	xx H

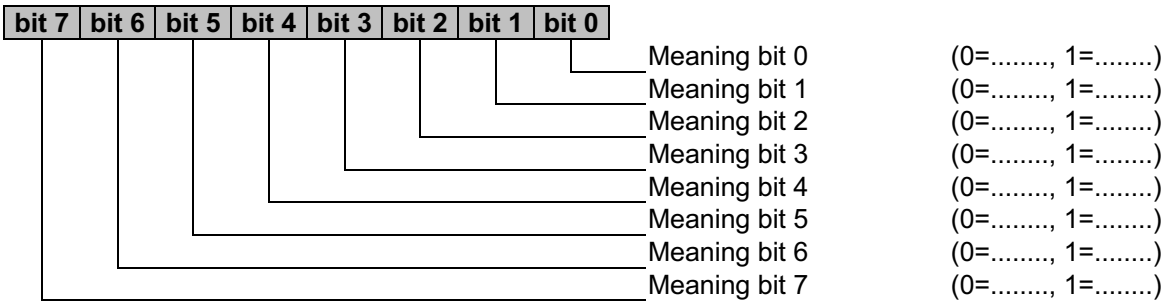
Answer:

Byte No.	MEANING	CODE
1	Block length	N-1
2	Title	FE H
3	RAM cell/s issued	xx H
....	....	....
N-1	RAM cell/s issued	xx H
N	Checksum	xx H

3.2.7.2.1.
RAM Addresses

Address (Hex.)	Length (Dec.)	Dimension	Conversion formula	Range
TBD	TBD	Parameter/State 1	TBD	TBD
TBD	TBD	Parameter/State 2	TBD	TBD
TBD	TBD	Parameter/State 3	TBD	TBD
TBD	TBD	Parameter/State 4	TBD	TBD
TBD	TBD	Parameter/State 5	TBD	TBD
		.....		

3.2.7.2.2.
State decoding



3.2.7.3.
RAM Cells Writing description

Request:

Byte No.	MEANING	CODE
1	Block length	N-1
2	Title	02 H
3	No. of RAM Cells to write **(n)**	xx H
4	Initial cell address (H)	xx H
5	Initial cell address (L)	xx H
6	Value to write **1**	xx H
....	.....	....
N-1	Value to write **n**	xx H
N	Checksum	xx H

Answer:

Byte No.	MEANING	CODE
1	Block length	05 H
2	Title	ED H
3	Initial cell address (H)	xx H
4	Initial cell address (L)	xx H
5	Verify o.k. / not o.k.	FF h = verify o.k.
6	Checksum	xx H

3.2.7.3.1.
RAM Addresses

Address (Hex.)	Length (Dec.)	Dimension	Conversion formula	Range
TBD	TBD	Parameter/State 1	TBD	TBD
TBD	TBD	Parameter/State 2	TBD	TBD
TBD	TBD	Parameter/State 3	TBD	TBD
TBD	TBD	Parameter/State 4	TBD	TBD
TBD	TBD	Parameter/State 5	TBD	TBD
		.....		

3.2.7.4.
EPROM Reading description

Request:

Byte No.	MEANING	CODE
1	Block length	05 H
2	Title	03 H
3	No. of requested EPROM cells	xx H
4	Requested cells initial address (H)	xx H
5	Requested cells initial address (L)	xx H
6	Checksum	xx H

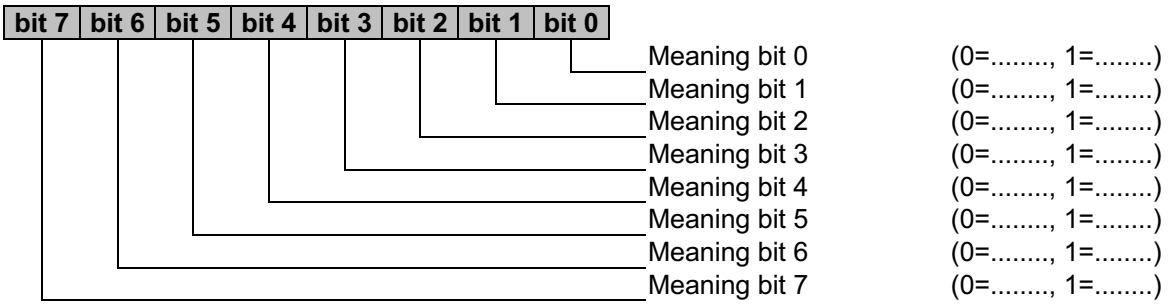
Answer:

Byte No.	MEANING	CODE
1	Block length	N-1
2	Title	FD H
3	Issued EPROM cell/s	xx H
....	.....	....
N-1	Issued EPROM cell/s	xx H
N	Checksum	xx H

3.2.7.4.1.
EPROM Addresses

Address (Hex.)	Length (Dec.)	Dimension	Conversion formula	Range
TBD	TBD	Parameter/State 1	TBD	TBD
TBD	TBD	Parameter/State 2	TBD	TBD
TBD	TBD	Parameter/State 3	TBD	TBD
TBD	TBD	Parameter/State 4	TBD	TBD
TBD	TBD	Parameter/State 5	TBD	TBD
		.....		

3.2.7.4.2.
State decoding



3.2.7.5.
Error Memory Reading description

Request:

Byte No.	MEANING	CODE
1	Block length	02 H
2	Title	07 H
3	Checksum	09 H

Answer:

Byte No.	MEANING	CODE
1	Block length	N-1
2	Title	FC H
3	1st memory error byte	xx H
....	....	....
N-1	nth memory error byte	xx H
N	Checksum	xx H

If there are no memorised errors the trigger box should respond with a block without parameters (02, FC, FE).

3.2.7.5.1.
Memory Error structure.

The memory error is made by 5 byte cells containing the required information to describe any error which is memorised by the system. Each cell contains the following fields:

1st Byte	**Failed Component Code**
2nd Byte	**State Error Code / Error Type**
3rd Byte	**Environmental Condition 1**
4th Byte	**Environmental Condition 2**
5th Byte	**Error Counter**

The max number of memorising cells is TBD. In the event where all the cells are busy, by recurrence of a new failure the cell with lower error counter will be covered.

The **Component Code** identifies the faulty element (see component code description).

The **Error State** is made by the more significant 3 bit relevant to the 2nd byte and it is decoded in the following way:

bit 7	6	5	Meaning
0	0	0	Error not present
0	0	1	Error present
0	1	x	Available
1	x	x	Available

The **Error Type** describes the fault typology coupled with Component Code (see Error Type Description) and it is made by the 5 bit less significant of the 2nd byte.

The **Environmental Conditions** represent the value of two parameters found at failure detection time. To each component are associated the required parameters to describe the failure with relevant conversion tables (see component code description).

The **Error Counter** is positioned to its max value (64) in the moment where the fault is memorised. Starting from next key on run (key on), in the moment where the absence of relevant failure is verified, the counter is diminished by one unit , until reaching the zero value. Data contained in error memory will be held anyhow even at reaching of zero value in the counter.

3.2.7.5.2.
Component Code Description.

Code	Component	PAR. 1	Conversion	PAR. 2	Conversion
00 h	ECU	/	/	/	/
01 h	Component 1	Parameter 1	Convers. 1	Parameter 2	Convers. 2
02 h	Component 2	Parameter 1	Convers. 1	Parameter 2	Convers. 2
03 h	Component 3	/	/	/	/
04 h	Component 4	Parameter 1	Convers. 1	Parameter 2	Convers. 2
05 h	Component 5	/	/	/	/
06 h	Component 6	Parameter 1	Convers. 1	Parameter 2	Convers. 2
07 h	.....				
08 h	.....				
09 h	.....				
0A h	.....				
0B h	.....				
0C h	.....				
0D h	.....				
0E h	.....				
0F h	.....				
10 h	.....				

Note: the conversion formulas may be different from those used for Parameter reading because the environmental parameter length (memorised with errors) is always of 1 byte.

3.2.7.5.3.
Error Type description.

Code	Error Type
01 h	Open circuit
02 h	Short circuit at GND
03 h	Short circuit at V batt
04 h	Open circuit / Short circuit at GND
05 h	Open circuit / Short circuit at V batt
06 h	Too low value
07 h	Too high value
08 h	Constant value
09 h	Plausibility
0A h	.....
0B h	.....
0C h	.....
0D h	.....
0E h	.....
0F h	.....
10 h	.....
11 h	.....

3.2.7.6.
ADC Channel Reading description

Request:

Byte No.	MEANING	CODE
1	Block length	03 H
2	Title	08 H
3	Channel No.	xx H
4	Checksum	xx H

Answer:

Byte No.	MEANING	CODE
1	Block length	04 H
2	Title	FB H
3	Sent channel (H)	xx H
4	Sent channel (L)	xx H
5	Checksum	xx H

3.2.7.6.1.
ADC available channel list

Channel (Hex.)	Dimension	Conversion formula	Range
01	Channel 1	TBD	TBD
02	Channel 2	TBD	TBD
03	Channel 3	TBD	TBD
04	Channel 4	TBD	TBD
05	Channel 5	TBD	TBD
.....	.....		

3.2.7.7.
Parameters Reading description

Request:

Byte No.	MEANING	CODE
1	Block length	03 H
2	Title	10 H
3	Requested parameter number	xx H
4	Checksum	xx H

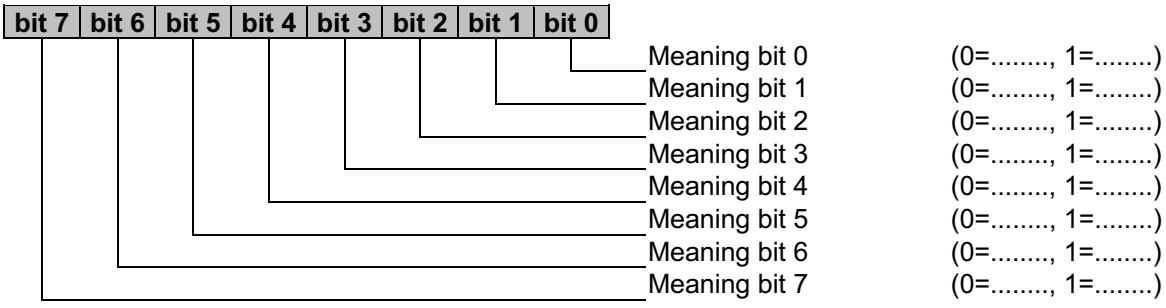
Answer:

Byte No.	MEANING	CODE
1	Block length	N-1
2	Title	EC H
3	Parameter	xx H
....	.....	xx H
N	Checksum	xx H

3.2.7.7.1.
Parameter List

Parameter (Hex.)	Length (Dec.)	Dimension	Conversion formula	Range
01	TBD	Parameter/State	TBD	TBD
02	TBD	Parameter/State	TBD	TBD
03	TBD	Parameter/State	TBD	TBD
04	TBD	Parameter/State	TBD	TBD
05	TBD	Parameter/State	TBD	TBD
.....		.....		

3.2.7.7.2.
State Decoding



3.2.7.8.
Parameter Writing description

Request:

Byte No.	MEANING	CODE
1	Block length	03 H
2	Title	11 H
3	Requested Parameter number	xx H
4	Checksum	xx H

Answer:

Byte No.	MEANING	CODE
1	Block length	N-1
2	Title	EB H
3	Parameter	xx H
....	.....	xx H
N	Checksum	xx H

3.2.7.9.
Snapshot Reading description

Request:

Byte No.	MEANING	CODE
1	Block length	03 H
2	Title	12 H
3	Requested Snapshot number	xx H
4	Checksum	xx H

Answer:

Byte No.	MEANING	CODE
1	Block length	N-1
2	Title	F4 H
3	Parameter 1	xx H
....	....	....
N-1	Parameter n	xx H
N	Checksum	xx H

It is possible to have more snapshots in such a way to group data in more blocks. Conversion formulas are the same used for Parameters and RAM cells.

3.2.7.10.
LOGIN Request description.

Before entering the EEPROM cells for writing and/or reading it is required to make a login procedure, which consist in transmitting to trigger box a password (16 bit) in a dedicated address (16 bit).
If the password and address are correct , the trigger box answers with a correct login block , if comparison is wrong the trigger box answers with a wrong login block.
After a correct login , the access to EEPROM is allowed until another diagnostic function is requested or the diagnostic session is interrupted as described below:

F/L Tester	E.C.U.
Login Request ###	
	### Login Answer
Address reading ###	
	### Address Transmission
Login Request ###	
	### Login Answer
Writing in EEPROM ###	
	### Answer to writing in EEPROM
Writing in EEPROM ###	
	### Answer to writing in EEPROM
ACK###	
	###ACK

If the frame of writing/reading sequence in EEPROM is interrupted by another request or the talk is interrupted, then the following WWPROM access should be preceded by another login request.

Password address : xxxx h.
Password : xxxx h.

Request:

Byte No.	MEANING	CODE
1	Block length	06 H
2	Title	18 H
3	Password address (H)	xx H
4	Password address (L)	xx H
5	Password (H)	xx H
6	Password (L)	xx H
7	Checksum	xx H

Correct Login Answer:

Byte No.	MEANING		CODE
1	Block length		06 H
2	Title		F0 H
3	Initial address (H)	(1)	xx H
4	Initial address (L)	(1)	xx H
5	Final address (H)	(1)	xx H
6	Final address (L)	(1)	xx H
7	Checksum		xx H

(1) The couple of addresses represent the EEPROM area accessible to F/L Tester.

Wrong Login Answer:

Byte No.	MEANING	CODE
1	Block length	02 H
2	Title	F0 H
3	Checksum	F2 H

3.2.7.11.
EEPROM Reading description

Request:

Byte No.	MEANING	CODE
1	Block length	05 H
2	Title	19 H
3	Requested EEPROM cells number	xx H
4	Requested cells initial address (H)	xx H
5	Requested cells initial address (L)	xx H
6	Checksum	xx H

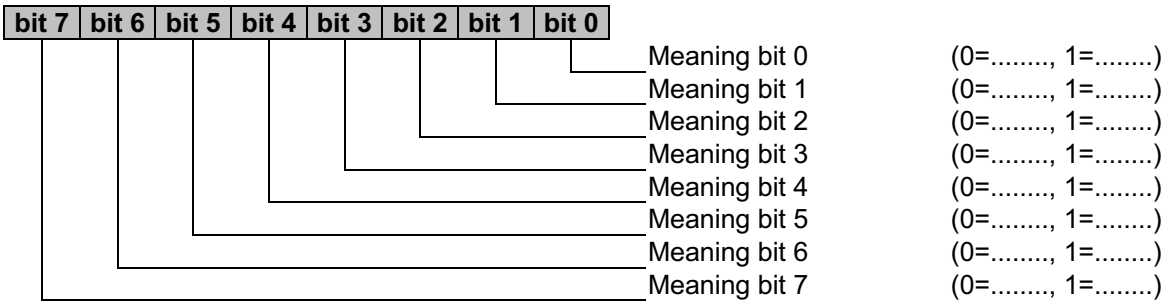
Answer:

Byte No.	MEANING	CODE
1	Block length	N-1
2	Title	EF H
3	EEPROM 1 content	xx H
....	....	....
N-1	EEPROM n content	xx H
N	Checksum	xx H

3.2.7.11.1.
EEPROM Addresses

Address (Hex.)	Length (Dec.)	Dimension	Conversion formula	Range
TBD	TBD	Parameter/State	TBD	TBD
TBD	TBD	Parameter/State	TBD	TBD
TBD	TBD	Parameter/State	TBD	TBD
TBD	TBD	Parameter/State	TBD	TBD
TBD	TBD	Parameter/State	TBD	TBD
		.....		

3.2.7.11.2.
State Decoding



3.2.7.12.
EEPROM Writing description

Request:

Byte No.	MEANING	CODE
1	Bloch length	N-1
2	Title	1A H
3	Number of cells to write **(n)**	xx H
4	Initial cells address (H)	xx H
5	Initial cells address (L)	xx H
6	Value to write **1**	xx H
...	.....	.....
N-1	Value to write **n**	xx H
N	Checksum	xx H

Answer:

Byte No.	MEANING	CODE
1	Block length	05 H
2	Title	F9 H
3	Initial cells address (H)	xx H
4	Initial cells address (L)	xx H
5	Verify o.k / not o.k	FF h = verify o.k.
6	Checksum	xx H

3.2.7.12.1.
EEPROM Addresses

Address (Hex.)	Length (Dec.)	Dimension	Conversion formula	Range
TBD	TBD	Parameter/State	TBD	TBD
TBD	TBD	Parameter/State	TBD	TBD
TBD	TBD	Parameter/State	TBD	TBD
TBD	TBD	Parameter/State	TBD	TBD
TBD	TBD	Parameter/State	TBD	TBD
		.....		

3.2.7.13.
Download Transfer description

Request:

Byte No.	MEANING	CODE
1	Block length	N-1 (max 44 H)
2	Title	1F H
3	Writing block number (H)	xx H
4	Writing block number (L)	xx H
5	Byte **1**	xx H
....	....	....
N-1	Byte **n**	xx H
N	Checksum	xx H

Note: - For this block the length is not 32 but it is 69 byte (length = 68).
- In the request block even a part only of the 64 byte of a memory block may be transmitted.

Correct download request answer:

Byte No.	MEANING	CODE
1	Block length	04 H
2	Title	F7 H
3	Following block number (H)	xx H
4	Following block number (L)	xx H
5	Checksum	xx H

Wrong download answer (No Acknowledge):

Byte No.	MEANING	CODE
1	Block length	02 H
2	Title	0A H
3	Checksum	0C H

3.2.7.13.1.
List of memory blocks accepted by E.C.U.

Block No. (Hex.)	Byte (Dec.)	Description	Byte Content
01	1	TBD	TBD
	....	....	....
	64	TBD	TBD
02	1	TBD	TBD
	....	....	....
	64	TBD	TBD
01	1	TBD	TBD
	....	....	....
	64	TBD	TBD

3.2.7.14.
Download Request description

The Download procedure permits to download into memory ,same memory blocks of 64 byte. If writing is not possible the trigger box will transmit a No Acknowledge block.
The tester in request block should indicate the number of blocks that intend to transfer and the initial writing block.

Request:

Byte No.	MEANING	CODE
1	Block length	06 H
2	Title	1E H
3	Number of blocks (H)	xx H
4	Number of blocks (L)	xx H
5	Start block number (H)	xx H
6	Start block number (L)	xx H
7	Checksum	xx H

Correct download request answer:

Byte No.	MEANING	CODE
1	Block length	04 H
2	Title	F7 H
3	Following block number (H)	xx H
4	Following block number (L)	xx H
5	Checksum	xx H

Wrong download answer (No Acknowledge):

Byte No.	MEANING	CODE
1	Block length	02 H
2	Title	0A H
3	Checksum	0C H

3.2.7.15.
Safety Code Transmission description (engine trigger boxes only)

Request:

Byte No.	MEANING	CODE
1	Block length	07 H
2	Title	20 H
3	Code 1 (BCD code)	xx H
....	.....	....
7	Code 5 (BCD code)	xx H
8	Checksum	xx H

Safety Code answer (Acknowledge):

Byte No.	MEANING	CODE
1	Block length	02 H
2	Title	09 H
3	Checksum	0B H

The trigger box answer with an Acknowledge anyhow, even when code transmitted from tester is wrong. If code is right the engine trigger box allows the vehicle ignition.

3.2.7.16.
Acknowledge description

Byte No.	MEANING	CODE
1	Block length	02 H
2	Title	09 H
3	Checksum	0B H

3.2.7.17.
No Acknowledge description

Byte No.	MEANING	CODE
1	Block length	02 H
2	Title	0A H
3	Checksum	0C H

It is repeated the block previously transmitted.

3.2.7.18.
Unknown Title description / Unpracticable Function

Byte No.	MEANING	CODE
1	Block length	02 H
2	Title	0B H
3	Checksum	0D H

This block is used when there are no communication errors but the request block has an unknown title or the requested function is unpracticable.

3.2.7.19.
Diagnosis End description

Byte No.	MEANING	CODE
1	Block length	02 H
2	Title	06 H
3	Checksum	08 H

The trigger box ends the diagnostic talk without sending any answer.

3.2.7.20.
Error Memory Delete Request description

Byte No.	MEANING	CODE
1	Block length	02 H
2	Title	05 H
3	Checksum	07 H

3.3.
Active Diagnosis

3.3.1.
Active Diagnosis Modality

Vehicle condition	: .....
Device activation interruption modality	: Direct deactivation; Exceeding the max time (1); ..... Diagnosis end.

(1) The max activation time is xx seconds.

In the event where the active diagnosis entering implies the system functional deactivation, it must be foreseen the failure warning light lightening.

The activation commands are two : the first one activate the component only, while the second returns a component behaviour feedback.

3.3.1.1.
Actuator Activation Block

Request:

Byte No.	MEANING	CODE
1	Block length	03 H
2	Title	04 H
3	Component code	xx H
4	Checksum	xx H

Answer (Acknowledge):

Byte No.	MEANING	CODE
1	Block length	02 H
2	Title	09 H
3	Checksum	0B H

In the event where component activation is not possible, the answer is made of an “Unknown title / Unpracticable Function” block (Title OB H).

In the event where the diagnostic talk is interrupted during system components activation (Active Diagnosis) it must be foreseen the automatic deactivation of the aforementioned.

It must be available a command deactivating all the actuators (FF h).

3.3.1.1.1.
Activating Device List

Code (Hex.)	Component	Activation type
01	Component 1	Description
02	Component 2	Description
03	Component 3	Description
04	Component 4	Description
05	Component 5	Description
06	Component 6	Description
.....	.....	.....
FF	**Deactivation of all the actuators**	

3.3.1.2.
Actuators Activation Blocking with Feedback

Request:

Byte No.	MEANING	CODE
1	Block length	N-1
2	Title	17 H
3	Component code	xx H
4	Parameter 1	xx H
....	....	....
N-1	Parameter n	xx H
N	Checksum	xx H

Answer:

Byte No.	MEANING	CODE
1	Block length	xx H
2	Title	E8 H
3	Feedback 1	xx H
....	....	....
N-1	Feedback n	xx H
N	Checksum	xx H

In the event where component activation is not possible, the answer is made of an “Unknown title / Unpracticable Function” block (Title OB H).

If the activation of the selected component is of the temporised type, the title block E8 H must be repeated until component deactivation.

In the event where the diagnostic talk is interrupted during system components activation (Active Diagnosis) it must be foreseen the automatic deactivation of the aforementioned.

It must be available a command deactivating all the actuators (FF h).

3.3.1.2.1.
List of devices activating by Feedback

Code (Hex.)	Component	Parameter description	Feedback type
01	Component 1	Parameters	Feedback 1
02	Component 2	Parameters	Feedback 2
03	Component 3	Parameters	Feedback 3
04	Component 4	Parameters	Feedback 4
05	Component 5	Parameters	Feedback 5
...	.....	.....	.....
FF	**Deactivate all the actuators**	None	None