

## MB - 4 Cylinder M111 E20/ E23 T0/T1N

### TC6MOD 1.11

#### TC6MOD 1.11 Test Communication CARB; Mode 6, Output Test Thresholds

##### FDEF TC6MOD 1.11 Function definition

Structure of the protocol is described in --> %TCCOM

The basis of this section is SAE J1979 Mode 6:

Mode 6 should give access to the current test results and test thresholds from not continuously tested functions.

As a starting value at an original start, after power-failure or a Memory fault deletion, '00' must be entered in value and threshold. CAUTION ! Values must be saved in the continual- RAM !

TID \$00                   ►           Bit coded transfer from control unit supported TID s. (must be in Mode 6 and is generated by TC6MODx.y)

DATA 3: --> \$FF (without meaning)

DATA 4: --> Output .....; supported TID \$01 .. TID \$08; Bit 7 marked PID \$01;

DATA 5: --> Output .....; supported TID \$09 .. TID \$10;

DATA 6: --> Output .....; supported TID \$11 .. TID \$18;

DATA 7: --> Output .....; supported TID \$19 .. TID \$20; Bit 0 marked PID \$20;

With the TID's \$20; \$40; \$60; \$80; \$A0; \$C0 and \$E0 with analogue procedure.

In the following tables only the TID \$00 (\$20 etc.) reported values are actually supplied:

For TID's >= 1 the following applies:

The subsequent TID's from the respective test function are provided by the continuous-RAM, the following structure is standard:

Byte 1:           TID the selected function, see table below

Byte 2:           Number of saved value blocks

Byte 3:           Conversion values for output routine

Byte 4:           DATA 3:           Bit 0-6: Number of measuring path within TID. See table below

Bit 7:           0 meaning bad, when value is larger threshold,

1 meaning bad, when value is smaller threshold.

Byte 5:           DATA 4:           High-Byte - value (possiby fill with 00h)

Byte 6:           DATA 5:           Low-Byte - value

Byte 7:           DATA 6:           High-Byte - threshold (possiby fill with 00h)

Byte 8:           DATA 7:           Low-Byte - threshold

Byte 9-14:       if applicable 2. Value block analog Byte 3-8

Byte 15-20:      if applicable 3. Value block analog Byte 3-8

etc.

##### TID \$01 Catalyst Conversion

| Conversion Label | Data 3 bin (Nr.) | Data 4+5 Value | Data 6+7 Threshold | component  | comment                                |
|------------------|------------------|----------------|--------------------|------------|----------------------------------------|
|                  | 0 0000001 (1)    | kkagw          | AFBKAT             | Kat. Bank1 | count Matrix element with AV's > limit |
|                  | 0 0000010 (2)    | kkagw2         | AFBKAT             | Kat. Bank2 | count Matrix element with AV's >       |

##### TID \$03 Secondary Air System

| Conversion Label | Data 3 bin (Nr.) | Data 4+5 Value | Data 6+7 Threshold | component  | comment                      |
|------------------|------------------|----------------|--------------------|------------|------------------------------|
|                  | 1 0000011 (3)    | spdfrrp        | DFRSLS             | SLV-Bank 1 | Delta fr with pump on        |
|                  | 1 0000100 (4)    | spdfrrp2       | DFRSLS2            | SLV-Bank 1 | Delta fr with pump on bank 2 |
|                  | 0 0001011 (11)   | tmaxdsls       | TWFRDSLS           | SLS-Bank 1 | Time-Out for B_frmax =1      |
|                  | 0 0001100 (12)   | tmaxdsls       | TWFRDSLS           | SLS-Bank 1 | Time-Out for B_frmax2 =1     |

##### TID \$04 Exhaust Recirculation

| Conversion Label | Data 3 bin (Nr.) | Data 4+5 Value | Data 6+7 Threshold | component     | comment         |
|------------------|------------------|----------------|--------------------|---------------|-----------------|
|                  | 1 0000101 (5)    | dpsaug         | PRDAGR             | EGR-System B1 | Pressure method |

# TID \$05 Tank Ventilation System

Choice of two alternative methods via variant coding:

- A. vk\_motl.b4 = 1 > System test  
 B. vk\_motl.b4 = 0 > TEV-Check using pressure modulation

## A. System Test:

|           |                |        |         |    |                                    |
|-----------|----------------|--------|---------|----|------------------------------------|
| 96 ms     | 0 0001001 (9)  | tdteab | TDTEGR  | TE | vacuum pressure diagn., large leak |
| 0.238 hPa | 1 0001010 (10) | pttrk  | DDPTEKU | TE | vacuum pressure diagn., TEV-Fault  |
| 0.238 hPa | 1 0001011 (11) | pttr   | DDPTEAV | TE | vacuum pressure diagn., AAV-Fault  |
|           | 0 0001101 (13) | qudg   | GGQTED  | TE | vacuum pressure diagn., micro leak |

## B. TEV-Check

| Conversion | Data 3         | Data 4+5 | Data 6+7  | component | comment                        |
|------------|----------------|----------|-----------|-----------|--------------------------------|
| Label      | bin (Nr.)      | Value    | Threshold |           |                                |
|            | 1 0011101 (29) | dtevs    | dtevm     | TEV       | Pressure modulation TEV Bank 1 |
|            | 1 0011110 (30) | dtevs2   | dtevm2    | TEV       | Pressure modulation TEV Bank 2 |

TID \$06 Probe Heating no output, because of continual testing.

TID \$07 Catalytic-Heating no output, because of no electrical catalytic heating.

## TID \$08 Camshaft Adjustment

| Conversion | Data 3        | Data 4+5 | Data 6+7  | component    | comment                                                      |
|------------|---------------|----------|-----------|--------------|--------------------------------------------------------------|
| Label      | bin (Nr.)     | Value    | Threshold |              |                                                              |
|            | 1 0000001 (1) | dpsnws   | PRDNWS    | NoWe-Steller | dnwss/dnwsm intake manifold pressure stroke                  |
|            | 1 0000010 (2) | dpsnws2  | PRDNWS    | NoWe-St. B2  | dnws2s/dnws2m intake manifold pressure stroke (only 12-cyl.) |

## TID \$09 Fuel Supply System

| Conversion | Data 3        | Data 4+5 | Data 6+7  | component | comment                                        |
|------------|---------------|----------|-----------|-----------|------------------------------------------------|
| Label      | bin (Nr.)     | Value    | Threshold |           |                                                |
|            | 0 0000001 (1) | fra_b1h  | FRADX     | KVS       | dfrax1/dfraxmmultiple Adaptation value         |
|            | 1 0000001 (1) | fra_b1h  | FRADN     | KVS       | dfrax1/dfraxmmultiple Adaptation value         |
|            | 0 0000010 (2) | fra_b2h  | FRADX     | KVS       | dfrax2/dfraxmmultiple Adaptation value         |
|            | 1 0000010 (2) | fra_b2h  | FRADN     | KVS       | dfrax2/dfraxmmultiple Adaptation value         |
|            | 0 0000011 (3) | tra_b1*  | TRADX     | KVS       | trax1 /traxm add. Adaptation value             |
|            | 1 0000011 (3) | tra_b1*  | TRADN     | KVS       | trax2 /tranm add. Adaptation value             |
|            | 0 0000100 (4) | tra_b2*  | TRADX     | KVS       | trax2 /traxm add. Adaptation value             |
|            | 1 0000100 (4) | tra_b2*  | TRADN     | KVS       | tran2 /tranm add. Adaptation value             |
|            | 0 0000101 (5) | dtv_b1*  | DTVDX     | KVS       | dtv1 add. Adaptation value - Bank 1 (ts-Fault) |
|            | 1 0000101 (5) | dtv_b1*  | DTVDN     | KVS       | dtv1 add. Adaptation value - Bank 1 (ts-Fault) |
|            | 0 0000110 (6) | dtv_b2*  | DTVDX     | KVS       | dtv2 add. Adaptation value - Bank 1 (ts-Fault) |
|            | 1 0000110 (6) | dtv_b2*  | DTVDN     | KVS       | dtv2 add. Adaptation value - Bank 1 (ts-Fault) |

\* Advice: 6 bits from low-, 2 bits from high-byte

In the ME-systems the measurements- and thresholds are copied in a reserved RAM-area and pass from there to the output. The name of the saved RAM-cells, as well as the timing of the storage are (sorted by functions) are summarized in the following list:

| Funct./TID | Value   | from      | Threshold | from     | at                 | UMR      | Meas. | W-block | Comment  |
|------------|---------|-----------|-----------|----------|--------------------|----------|-------|---------|----------|
| DKAT       | KATWH   | 00h       | KATSH     | 00h      |                    |          |       | 01      |          |
|            | KATWL   | kkagw1    | KATSL     | afbkat   | katrdyz > TWRDYKAT | DEZ      | 01h   |         |          |
|            | KATWH2  | 00h       | KATSH2    | 00h      |                    |          |       | 02      | Bank2 or |
| DSLS       | KATWL2  | kkagw2    | KATSL     | afbkat   | katrdyz > TWRDYKAT | DEZ      | 02h   |         | CAN      |
|            | SLSXWH  | 00h       | SLSXSH    | 00h      |                    |          |       | 01      |          |
|            | SLSXWL  | tmaxdsls  | SLSXSL    | twfrdsls | LR on limit        | TQ100    | 0Bh   |         |          |
|            | SLSNWH  | fr-frslsa | SLSNSH    | dfrsls   |                    |          |       | 02      |          |
|            | SLSNWL  | fr-frslsa | SLSNSL    | dfrsls   | tmindsls > tdsls   | PER65535 | 83h   |         |          |
|            | SLSXWH2 | 00h       | SLSXSH2   | 00h      |                    |          |       | 03      | Bank2 or |
|            | SLSXWL2 | tmaxdsls  | SLSXSL2   | twfrdsls | LR on limit        | TQ100    | 0Ch   |         | CAN      |
|            | SLSNWH2 | fr-frslsa | SLSNSH2   | dfrsls   |                    |          |       | 04      | Bank2 or |
|            | SLSNWL2 | fr-frslsa | SLSNSL2   | dfrsls   | tmindsls > tdsls   | PER65535 | 84h   |         | CAN      |

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| Function/TID | Value    | from       | Threshold | from    | at         | UMR    | Meas. | W-block | Comment                            |
|--------------|----------|------------|-----------|---------|------------|--------|-------|---------|------------------------------------|
|              |          |            |           |         |            |        |       |         |                                    |
| DTES         | TESGGWH  | 00h        | TESGGS    | 00h     |            |        |       | 01      |                                    |
|              | TESGGWL  | gudauf     | TESGGS    | ggrrted | z_tesg = 1 | UPTGR  | 84h   |         | gross leak Gradient                |
|              | TESGPWH  | 00h        | TESGPS    | 00h     |            |        |       | 02      |                                    |
|              | TESGPWL  | pttr-pttrv | TESGPS    | PAAVMIN | z_tesg = 1 | UDPTO  | 8Eh   |         | gross leak Pressure                |
|              | TESGTWH  | 00h        | TESGTS    | 00h     |            |        |       | 03      |                                    |
|              | TESGTWL  | tdteab     | TESGTS    | tdtegr  | z_tesg = 1 | TQ400  | 05h   |         | gross leak Hose off                |
|              | TESTTWH  | 00h        | TESTTS    | 00h     |            |        |       | 04      |                                    |
|              | TESTTWL  | pttr       | TESTTS    | ddptetv | z_tes = 1  | UDPTO  | 86h   |         | TEV-Test TEV                       |
|              | TESTGWH  | 00h        | TESTGS    | 00h     |            |        |       | 05      |                                    |
|              | TESTGWL  | pttrk      | TESTGS    | ddpteku | z_tes = 1  | UDPTO  | 83h   |         | TEV- Test Gradient                 |
|              | TESTBWH  | 00h        | TESTBS    | 00h     |            |        |       | 06      |                                    |
|              | TESTBWL  | pttr       | TESTBS    | ddptear | z_tes = 1  | TQ400  | 0Ah   |         | TEV- Test Loading                  |
|              | TESDOWH  | 00h        | TESDOS    | 00h     |            |        |       | 07      |                                    |
|              | TESDOWL  | tdteozg    | TESDOS    | ttedozg | z_dsto = 1 | TQ400  | 1Ch   |         | Oscill.Pressure Sensor             |
|              | TESATWH  | 00h        | TESATS    | 00h     |            |        |       | 08      |                                    |
|              | TESATWL  | tdteudw    | TESATS    | ttedwu  | z_aav = 1  | TQ400  | 1Dh   |         | AAV- Test Pressure                 |
|              | TESAPWH  | 00h        | TESAPS    | 00h     |            |        |       | 09      |                                    |
|              | TESAPWL  | pttr       | TESAPS    | ddpteav | z_aav = 1  | UDPTO  | 8Ch   |         | AAV- Test Gradient                 |
|              | TESFQWH  | 00h        | TESFQS    | 00h     |            |        |       | 10      |                                    |
|              | TESFQWL  | qudg       | TESFQS    | ggqted  | z_tesf = 1 | FKT128 | 07h   |         | fine leak Test Grad.               |
|              | TESFTWH  | 00h        | TESFTS    | 00h     |            |        |       | 11      |                                    |
|              | TESFTWL  | tdtefl     | TESFTS    | tdted   | z_tesf = 1 | TQ400  | 89h   |         | fine leak Test Pres.               |
|              | TESTTWH2 | 00h        | TESTTS2   | 00h     |            |        |       | 12      |                                    |
|              | TESTTWL2 | tdtev      | TESTTS2   | tdtegr  | z_tes = 1  | TQ400  | 0Bh   |         | TEV-Test TEV left                  |
|              | TESTBWH2 | dfrdte     | TESTBS2   | dfdtm   |            |        |       | 13      |                                    |
|              | TESTBWL2 | dfrdte     | TESTBS2   | dfdtm   | z_tes = 1  | FPC50L | 8Dh   |         | TEV-Test Loading left (CAN)        |
| DTEV         | TEVWH    | 00h        | TEVSH     | 00h     |            |        |       | 01      |                                    |
|              | TEVWL    | ptevd      | TEVSL     | ptevg   | z_tev 0->1 | PABD   | 9Dh   |         | TEV- Test Pressure modulat.        |
|              | TEVWH2   | 00h        | TEVSH2    | 00h     |            |        |       | 02      |                                    |
|              | TEVWL2   | ptevd      | TEVSL2    | ptevg   | z_tev 0->1 | PABD   | 9Eh   |         | TEV- Test Pressure modulation left |
| DNWS         | NWSWH    | 00h        | NWSSH     | 00h     |            |        |       | 01      |                                    |
|              | NWSWL    | dpsnws     | NWSSL     | prdnwsi | z_nws 0->1 | PABD32 | 81h   |         | NWS                                |
|              | NWSWH2   | 00h        | NWSSH2    | 00h     |            |        |       | 02      |                                    |
| DAGR         | NWSWL2   | dpsnws2    | NWSSL2    | prdnwsi | z_nws 0->1 | PABD32 | 82h   |         | only NWS-12Cyl! (CAN)              |
|              | AGRWH    | 00h        | AGRS      | 00h     |            |        |       |         |                                    |
|              | AGRWL    | dpsaug     | AGRSL     | prdagr  | z_agr 0->1 | PABD   | 05h   | 01      | Exhaust gas recircul.              |

| Function/TID | Value    | from   | Threshold | from  | at          | UMR      | Meas. | W-block | Comment      |
|--------------|----------|--------|-----------|-------|-------------|----------|-------|---------|--------------|
|              |          |        |           |       |             |          |       |         |              |
| DKVS         | KVSFXWH  | fra_b1 | KVSFXSH   | fradx |             |          |       | 01      |              |
|              | KVSFXWL  | fra_b1 | KVSFXSL   | fradx | z_fra 0->1  | FPC50L   | 01h   |         |              |
|              | KVSFNWH  | fra_b1 | KVSFNSH   | fradn |             |          |       | 02      |              |
|              | KVSFNWL  | fra_b1 | KVSFNSL   | fradn | z_fra 0->1  | FPC50L   | 81h   |         |              |
|              | KVSTXWH  | tra_b1 | KVSTXSH   | tradx |             |          |       | 03      |              |
|              | KVSTXWL  | tra_b1 | KVSTXSL   | tradx | z_tra 0->1  | TEQ_CP2L | 03h   |         |              |
|              | KVSTNWH  | tra_b1 | KVSTNSH   | tradn |             |          |       | 04      |              |
|              | KVSTNWL  | tra_b1 | KVSTNSL   | tradn | z_tra 0->1  | TEQ_CP2L | 83h   |         |              |
|              | KVSDXWH  | dtv_b1 | KVSDXSH   | dtvdx |             |          |       | 05      |              |
|              | KVSDXWL  | dtv_b1 | KVSDXSL   | dtvdx | z_dtv 0->1  | TEQ_CP2L | 05h   |         |              |
|              | KVSDNWH  | dtv_b1 | KVSDNSH   | dtvdn |             |          |       | 06      |              |
|              | KVSDNWL  | dtv_b1 | KVSDNSL   | dtvdn | z_dtv 0->1  | TEQ_CP2L | 85h   |         |              |
|              | KVSFXWH2 | fra_b2 | KVSFXSH2  | fradx |             |          |       | 07      |              |
|              | KVSFXWL2 | fra_b2 | KVSFXSL2  | fradx | z_fra2 0->1 | FPC50L   | 02h   |         | CAN or Bank2 |
|              | KVSFNWH2 | fra_b2 | KVSFNSH2  | fradn |             |          |       | 08      |              |
|              | KVSFNWL2 | fra_b2 | KVSFNSL2  | fradn | z_fra2 0->1 | FPC50L   | 82h   |         | CAN or Bank2 |
|              | KVSTXWH2 | tra_b2 | KVSTXSH2  | tradx |             |          |       | 09      |              |
|              | KVSTXWL2 | tra_b2 | KVSTXSL2  | tradx | z_tra2 0->1 | TEQ_CP2L | 04h   |         | CAN or Bank2 |
|              | KVSTNWH2 | tra_b2 | KVSTNSH2  | tradn |             |          |       | 10      |              |
|              | KVSTNWL2 | tra_b2 | KVSTNSL2  | tradn | z_tra2 0->1 | TEQ_CP2L | 84h   |         | CAN or Bank2 |
|              | KVSDXWH2 | dtv_b2 | KVSDXSH2  | dtvdx |             |          |       | 11      |              |
|              | KVSDXWL2 | dtv_b2 | KVSDXSL2  | dtvdx | z_dtv2 0->1 | TEQ_CP2L | 06h   |         | CAN or Bank2 |
|              | KVSDNWH2 | dtv_b2 | KVSDNSH2  | dtvdn |             |          |       | 12      |              |
|              | KVSDNWL2 | dtv_b2 | KVSDNSL2  | dtvdn | z_dtv2 0->1 | TEQ_CP2L | 86h   |         | CAN or Bank2 |

## ABK TC6MOD 1.11 Abbreviations

## FB TC6MOD 1.11 Functional Descriptions

## APP TC6MOD 1.11 Application Instructions

## KDH TC6MOD 1.11 Customer Service Information

Section is KD-relevant.