IVT-Mod

HowTo's

Project	IVT-Modular
Description	
State	**Draft** x Review ☐ Released ☐ Note: Printouts are not under version control
Responsible	L. Breitenbach / A. Lepper
Creation	05.05.2013
Module Name	IVT-Mod
Hardware Version	
Firmware Version	
Product State	

Change history

Edition	Rev.	Date	Author	Chapter(s)	Description
0		05.05.2013	LBr	all	Creation, Configure Results
		15.05.2013	LBr	all	Configure CAN-ID, Modify CAN-Bitrate
		22.05.2013	LBr		Get Version + Get Device-ID added
		28.05.2013	LBr		Alive added, Configure Results Note 2 added

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1 Configuration

1.1 Configure Results

- Power up the sensor.
  The sensor retrieves the configuration from non volatile memory.
  The device will send results as last stored.
- Send Command "MODE-STOP".
- The device responds "MODE-STOP".
  The device leaves the measurement mode .
- Send Command "Config Result n".
- The device responds the "Config Result n".
- Send Command "STORE".
- The device responds "STORE".
  The device stores the actual configuration in non volatile memory.
- Send Command "MODE-RUN".
- The device responds the "MODE-RUN".
  The device enters the measurement mode.
- The device will deliver results as configured.

Note:

The new configuration will be lost after restart, if the command "STORE" is not applied to the device in "STOP-MODE".

1.1.1 Example: Configure Result U2 to send the Voltage all 60 ms and store

Sender	Tgm	CAN-ID	DLC	D0	D1	D2	D3	D4	D5	D6	D7
Host	Command "STOP"	411	08	34	00	01(2)	00	00	00	00	00
Device	Response "STOP"	511	08	B4	00	01	00	00	00	00	00
Host	Set Config Result n (Note 1)	411	08	22(1)	02	00	3C	00	00	00	00
Device	Response Config Result n	511	08	A2	02	00	3C	00	00	00	00
Host	Command "STORE"	411	08	32	00	00	00	00	00	00	00
Device	Response "STORE"	511	08	B2	00	00	00	00	00	0E	00
Host	Command "START"	411	08	34	01	01	00	00	00	00	00
Device	Response "START"	511	08	B4	01	01	00	00	00	00	00

Note 1:

- D0 = 0x22 means Set Config Result U2
- D1 = 0x02 means cyclic transmit
- D2-3 = 0x003C means Time = 60ms

Note 2:

- D0 = 0x34 means Set Mode
- D1 = 0x00 means run-mode =STOP
- D2 = 0x01 means startup-mode =RUN

1.2 Configure CAN-ID

- Disconnect other sensors
- Power up the sensor.
  The sensor retrieves the configuration from non volatile memory.
  The device will send results as last stored.
- Send Command "MODE-STOP".
- The device responds "MODE-STOP".
  The device leaves the measurement mode .
- Send Command "ID Res n" and the appropriate Serialnumber.
- The device responds the "ID Res n".
- Send Command "STORE".
- The device responds "STORE".
  The device stores the actual configuration in non volatile memory.
- Send Command "MODE-RUN".
- The device responds the "MODE-RUN".
  The device enters the measurement mode.
- The device will deliver results as configured with the new CAN-ID.

1.2.1 Example: Changing CAN-ID

Applying CAN-ID 0x624 to "Result Current" to the sensor with serial-number 1111= 0x00000457

Sender	Tgm	CAN-ID	DLC	D0	D1	D2	D3	D4	D5	D6	D7
Host	Command "STOP"	411	08	34	00	01	00	00	00	00	00
Device	Response "STOP"	511	08	B4	00	01	00	00	00	00	00
Host	Set Config Result n (Note 1)	411	08	10	06	24	00	00	04	57	00
Device	Response Config Result n	511	08	90	06	24	00	00	04	57	00
Host	Command "STORE"	411	08	32	00	00	00	00	00	00	00
Device	Response "STORE"	511	08	B2	00	00	00	00	00	0E	00
Host	Command "START"	411	08	34	01	01	00	00	00	00	00
Device	Response "START"	511	08	B4	01	01	00	00	00	00	00

Now the Result Current will be sent with the new CAN-ID

Sender	Tgm	CAN-ID	DLC	D0	D1	D2	D3	D4	D5
…..									
Host	Result I	624	06	00	03	xx	xx	xx	xx
Host	Result I	624	06	00	04	xx	xx	xx	xx
Host	Result I	624	06	00	05	xx	xx	xx	xx
…..									

1.3 Modify CAN-Bitrate

- Disconnect other sensors
- Power up the sensor.
  The sensor retrieves the configuration from non volatile memory.
  The device will use the CANBitrate as last stored.
- Send Command "MODE-STOP".

- The device responds "MODE-STOP".
  The device leaves the measurement mode .
- Send Command "RESTART with prescaler X"
- The device will restart using the new bitrate according to the new prescaler

1.3.1 Valid Prescalers

Prescaler	CAN-Bitrate
2	1000 Mbit/s
4	500 kbit/s
8	250 kbit/s

1.3.2 Example: Changing CAN-Bitrate

Restart to 250kbit/s

Sender	Tgm	CAN-ID	DLC	D0	D1	D2	D3	D4	D5	D6	D7
Host	Command "STOP"	411	08	34	00	01	00	00	00	00	00
Device	Response "STOP"	511	08	B4	00	01	00	00	00	00	00
Host	RESTART with prescaler 8	411	08	3A	08	00	00	00	00	00	00

Restart to 500kbit/s

Sender	Tgm	CAN-ID	DLC	D0	D1	D2	D3	D4	D5	D6	D7
Host	Command "STOP"	411	08	34	00	01	00	00	00	00	00
Device	Response "STOP"	511	08	B4	00	01	00	00	00	00	00
Host	RESTART with prescaler 4	411	08	3A	04	00	00	00	00	00	00

2 Retrieving Information

2.1 Get Version

```
data_1 = Variante;
data_2 = Version;
data_3 = Revision;
data_4 = Day;
data_5 = Month;
data_6 = Year;
```

2.1.1 Example: Retrieve Version

Sender	Tgm	CAN-ID	DLC	D0	D1	D2	D3	D4	D5	D6	D7
Host	Command "STOP"	411	08	34	00	01	00	00	00	00	00
Device	Response "STOP"	511	08	B4	00	01	00	00	00	00	00
Host	Get Version	411	08	7A	00	00	00	00	00	00	00
Device	Response Version	511	08	BA	01	01	05	1A	04	0D	00
Host	Command "START"	411	08	34	01	01	00	00	00	00	00
Device	Response "START"	511	08	B4	01	01	00	00	00	00	00

- Variante 1
- Version 1
- Revision 5
- Day 26
- Month 4
- Year 13 (2013)

2.2 Get Device-ID

```
DeviceId.TYP            = data_1;
DeviceId.CURRENT        = data_2;
DeviceId.CURRENT       *= 16;
DeviceId.CURRENT       += (UInt16) (data_3 / 16);
DeviceId.VOLT_CHANNELS  = (byte) (data_3 % 16);
DeviceId.T_O_I          = data_4;
DeviceId.COMMUNICATION  = data_5;
DeviceId.VDD            = data_6;
DeviceId.SPARE          = data_7;
```

2.2.1 Example: Retrieve Device-ID

Sender	Tgm	CAN-ID	DLC	D0	D1	D2	D3	D4	D5	D6	D7
Host	Command "STOP"	411	08	34	00	01	00	00	00	00	00
Device	Response "STOP"	511	08	B4	00	01	00	00	00	00	00
Host	Get Devic-ID	411	08	79	00	00	00	00	00	00	00
Device	Response Devic-ID	511	08	B9	01	12	C4	00	01	0C	00
Host	Command "START"	411	08	34	01	01	00	00	00	00	00
Device	Response "START"	511	08	B4	01	01	00	00	00	00	00

- DeviceId.TYP 1
- DeviceId.CURRENT 300
- DeviceId.VOLT_CHANNELS 4
- DeviceId.T_O_I 0
- DeviceId.COMMUNICATION 1
- DeviceId.VDD 12

DeviceId.SPARE 0

2.3 Alive

The sensor will send an alive-message on restart. The message contains the following information

Sender	Tgm	CAN-ID	DLC	D0	D1	D2	D3	D4	D5	D6	D7
Device	Response "STOP"	511	08	BF	XX	XX	YY	YY	YY	YY	00

- D0 = 0xBF means Alive
- D1-2 = 0xXXXX is the CAN-ID accepting commands
- D3-6 = 0xYYYYYYYYis the serial number of the device

2.3.1 Example: Alive

Sender	Tgm	CAN-ID	DLC	D0	D1	D2	D3	D4	D5	D6	D7
Device	Response "STOP"	511	08	BF	04	11	00	00	03	EC	00

The sensor with the serial number 1004 (000003EC) has just started up and accepts commands on CAN-Id 411.