



Guideline Development

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2	20.06.2011	Added: Service Command #STATUS	KeAr
3	09.01.2012	Some Improvements	KeAr
4	19.12.2012	Change of housing	KeAr

List of Content

Revision History	2
List of Content.....	3
List of figures	5
A English	6
1 Introduction	7
1.1 Global.....	7
2 Operation with company card inserted in PikoLoad.....	8
2.1 FMS-Data (if available in the vehicle)	8
2.2 Memory structure / philosophy of PikoLoad	10
2.3 Mass memory data.....	13
2.3.1 Example for requests concerning mass memory	15
2.3.2 Recommendations	19
2.4 Driver card data.....	20
2.4.1 Example for the download of the driver card from the tachograph	21
2.4.2 Example for the download of the driver cards at PikoLoad	23
2.4.3 Recommendations	24
2.5 TCO –Status Information	25
2.5.1 Example TCO-Status.....	26
3 Operation with Remote company card.....	27
3.1 Remote Authentication	27
3.2 FMS-Data (if available in the vehicle)	27
3.3 Mass memory data.....	27
3.3.1 Request and List commands	27
3.3.2 Special case	27
3.4 Driver card data.....	28
3.4.1 Driver card data downloaded from tachograph	28
3.4.2 Driver card dowloaded from PikoLoad	28
3.5 TCO Statusmeldung	28
4 Helpful Tools / Tips	29
4.1 Updates.....	29
4.1.1 Update using an USB-Stick.....	29
4.1.2 Remote Update	30
4.2 Service commands	31
4.2.1 Check version	31
4.2.2 EventLog	33
4.2.3 Mem-dump.....	34
4.2.4 Reset.....	35
4.2.5 Remote Download Test	35
4.2.6 FMS-Test.....	41

4.2.7 Request actual Status PikoLoad.....42

List of figures

Figure 1: Directory structure of PikoLoad	10
Figure 2: Directory structure PikoLoad „actual“	11
Figure 3: Directory structure PikoLoad „____pikosys_cards“	12
Figure 4: Example for List M	16
Figure 5: Example for REQ M	17
Figure 6: Example for REQ DDD	18
Figure 7: Content of the file Version.PSS	32
Figure 8: Result request version	32
Figure 9: Content of the file EventLog.PSS	33
Figure 10: Result request EventLog	33
Figure 11: Content of the file MemDump.PSS	34
Figure 12: Result of MemDump on the USB-Stick	34
Figure 13: Content of the file for Remote Download Test	35
Figure 14: Content of the directory „pikotest“	36
Figure 15: File contents Remote Download Test English	38
Figure 16: File content with errors	39
Figure 17: Excerpt from "User Guide for Remote Download"	40
Figure 18: Example result FMS test	41

A English

1 Introduction

1.1 Global

This guideline should help you to program and configure your system in the optimal way. PikoLoad was programmed with the intention to do the legal required download of the mass memory and the driver card without any parameter settings.

Basic requirement is the prior authentication of a valid company card.

This can easy be done by the insertion of a valid company card into PikoLoad or to do a remote authentication with a remote inserted valid company card.

The intention of this document is to assist you to configure your system in an optimal way. Please note that the proposals made in this document cannot be used as a programming directive.

PikoLoad is always working when the ignition is switched on in the vehicle.

After ignition off there is no communication possible with the vehicle (FMS data) or the tachograph.

2 Operation with company card inserted in PikoLoad

This chapter describes the system when using the PikoLoad with an inserted company card.

In this case it is assured that the authentication is always possible.

The advantage is that the PikoLoad can do the legal required downloads autonomous from the remote system to be offered to a connected bord computer

Remark to the number of possible company cards:

It is possible to get more than the often mentioned limitation to 63 company cards per company.

Correct is that a company normally gets one number (with 63 sub-numbers).

However it is possible to get further (main) numbers per company (incl. 63 sub-numbers).

Remark to company cards used in vehicles:

It is not explicitly forbidden to have a company card in the vehicle. The card holder is responsible for the correct (legal) use of the company card.

It is forbidden to have a company card inserted in the tachograph during driving!

It is forbidden to hand out the company card to unauthorized persons and to avoid that somebody gets unauthorized access to the data.

It is allowed to use the company card for authentication outside the tachograph (e.g. in PikoLoad). To be sure, you should notify the driver in written that he is not allowed to remove the company card from the PikoLoad.

In addition, it is also possible to seal the flap of the PikoLoad.

This chapter describes the use of PikoLoad connected to a bordcomputer via RS 232.

2.1 FMS-Data (if available in the vehicle)

If the vehicle delivers FMS data the PikoLoad gets the data at the "green" connector.

The data can be requested at RS 232 (PikoLoad) by asking the PGN number as described in the FMS documentation.

Note:

The FMS data are not stored on a plugged-in USB-Stick.

The actual version of FMS is vers. 2 with the following PGN's (the data are described as specified in the FMS documentation):

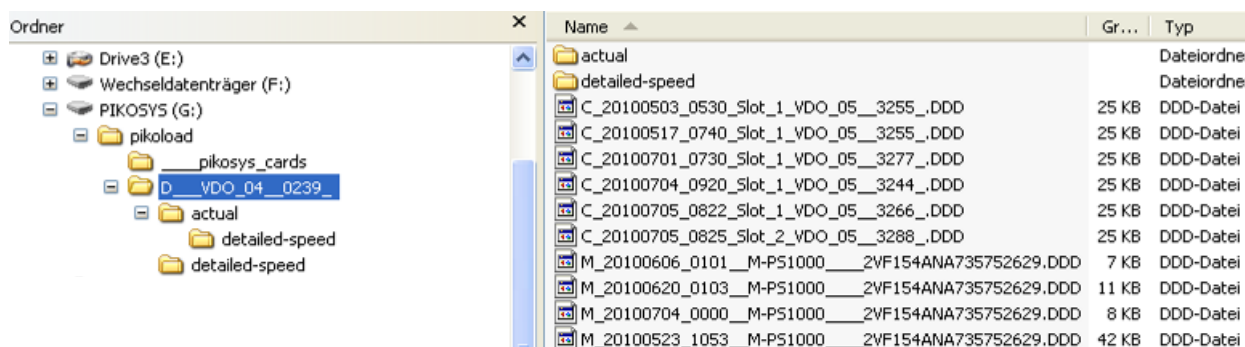
Vers.	PGN	Data	Bitposition / Length
1	FEF1	Wheel based speed Clutch switch Brake switch Cruise control active PTO state	8 / 16 30 / 2 28 / 2 24 / 2 48 / 5
1	F003	Accelerator pedal position 1 Engine Percent Load at Current Speed	8 / 8 16 / 8
1	FEE9	Engine total fuel used	32 / 32
1	FEFC	Fuel Level 1	8 / 8
1	F004	Engine speed	24 / 16
1	FEFA	Axle location Tire location Axle weight	0 / 4 4 / 4 8 / 16
1	FEE5	Engine total hours of Operation	0 / 32
1	FEFC	Vehicle identification number	0 / -
1	FDD1	Requests supported Diagnostics supported SW-version supported	2 / 2 0 / 2 8 / 32
1	FEC1	High resolution total vehicle distance	0 / 32
1	FEC0	Service distance	8 / 16
1	FE6C	Vehicle motion Driv. 1 working state Driv. 2 working state Vehicle Overspeed Driver 1 card Driver 2 card Driv. 1 time rel states Driv 2 time rel. states Direction indicator Tachgraph performance Handling information System event Tachogr. vehicle speed	6 / 2 0 / 3 3 / 3 14 / 2 12 / 2 20 / 4 8 / 4 16 / 4 30 / 2 28 / 2 26 / 2 24 / 2 48 / 16
1	FEFE	Engine coolant temperature	0 / 8
1	FEF5	Ambient Air Temperature	24 / 16
2	FE6B	Driver 1 identification Driver 2 identification	0 / - - / -
2	FEF2	Fuel Rate Instantaneous Fuel Economy	0 / 16 16 / 16
2	FDA4	At least one PTO engaged	48 / 8
2	FD09	High resolution engine total fuel used	32 / 32

2.2 Memory structure / philosophy of PikoLoad

The PikoLoad has its own philosophy for the internal storage of the mass memory data and the driver card data which is shown in the directory structure.

Example:

We assume that the actual date is 07.07.2010 and the actual time is 10.00 hours (UTC).



Name	Gr...	Typ
actual		Dateiordner
detailed-speed		Dateiordner
C_20100503_0530_Slot_1_VDO_05_3255_.DDD	25 KB	DDD-Datei
C_20100517_0740_Slot_1_VDO_05_3255_.DDD	25 KB	DDD-Datei
C_20100701_0730_Slot_1_VDO_05_3277_.DDD	25 KB	DDD-Datei
C_20100704_0920_Slot_1_VDO_05_3244_.DDD	25 KB	DDD-Datei
C_20100705_0822_Slot_1_VDO_05_3266_.DDD	25 KB	DDD-Datei
C_20100705_0825_Slot_2_VDO_05_3288_.DDD	25 KB	DDD-Datei
M_20100606_0101_M-PS1000_2VF154ANA735752629.DDD	7 KB	DDD-Datei
M_20100620_0103_M-PS1000_2VF154ANA735752629.DDD	11 KB	DDD-Datei
M_20100704_0000_M-PS1000_2VF154ANA735752629.DDD	8 KB	DDD-Datei
M_20100523_1053_M-PS1000_2VF154ANA735752629.DDD	42 KB	DDD-Datei

Figure 1: Directory structure of PikoLoad

In the sub directory „pikoload“ the downloaded data are stored for one or more company cards.

In our example there was only one company card (D__VDO_04__0239_) used

Therefore we see one sub directory „ D__VDO_04__0239_“. In this sub directory are all data stored which are “archived” by PikoLoad.

Mass memory data “archive” with 14 days of activities each.

Driver card data “archive” interval is every 28 days.

In our example you can find the following files in the directory „D__VDO_04__0239_“:

Mass memory files:

M_20100523_1053__M-PS1000____2VF154ANA735752629.DDD (Installation-DDD)

M_20100606_0101__M-PS1000____2VF154ANA735752629.DDD

M_20100620_0103__M-PS1000____2VF154ANA735752629.DDD

M_20100704_0000__M-PS1000____2VF154ANA735752629.DDD

Remark:

After a successful installation the PikoLoad stores the installation-DDD. The content consists of max. 91 day of activities to the past.

Each “archived” mass memory file contains 14 days of activities.

Driver card files:

C_20100704_0920_Slot_1_VDO_05__3244_.DDD
C_20100503_0530_Slot_1_VDO_05__3255_.DDD
C_20100517_0740_Slot_1_VDO_05__3255_.DDD
C_20100701_0730_Slot_1_VDO_05__3277_.DDD
C_20100705_0822_Slot_1_VDO_05__3266_.DDD
C_20100705_0825_Slot_2_VDO_05__3288_.DDD

All „archived“ mass memory data with detailed speed are stored in the sub directory „detailed-speed“. These files have the detailed speed information stored 24 (driving) hours in the past (every second one value).
This means $24 \cdot 60 \cdot 60 = 86400$ values.

In the sub directory „actual“ you will find all files (mass memory and driver card) which are downloaded from PikoLoad but have not been „archived“.

In our example:

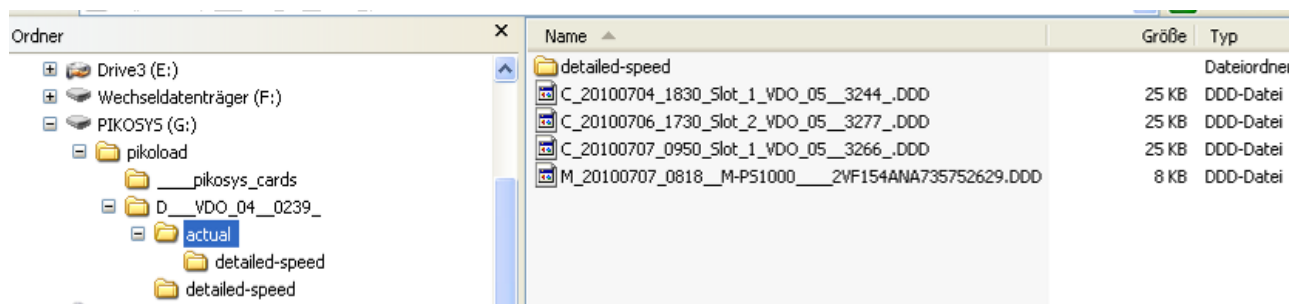


Figure 2: Directory structure PikoLoad „actual“

In the directory „actual“ you can find the following files:

Mass memory files:

M_20100707_0818__M-PS1000____2VF154ANA735752629.DDD

Driver card files:

C_20100704_1830_Slot_1_VDO_05__3244_.DDD
C_20100706_1730_Slot_2_VDO_05__3277_.DDD
C_20100707_0822_Slot_1_VDO_05__3266_.DDD

The directory „detailed-speed“ contains the „actual“ mass memory file with detailed speed.

In the directory „__pikosys_cards“ are all driver card files downloaded directly at the PikoLoad without any logical „archive“:

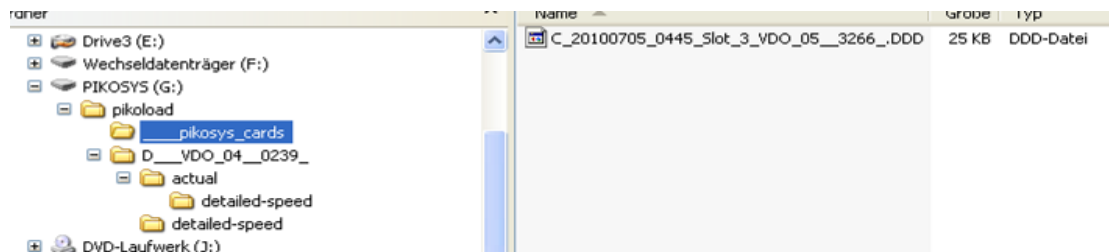


Figure 3: Directory structure PikoLoad „____pikosys_cards“

Driver card files:

C_20100705_0445_Slot_3_VDO_05__3266_.DDD

This file has been loaded from the PikoLoad-Slot (=Slot3)

2.3 Mass memory data

Nomenclature of the mass memory files:

M_YYYYMMDD_Time(UTC)_Vehicle plate number_VehicleID.DDD

YYYY = Year

MM = Month

DD = Day

Time = UTC Time (hours and minute)

Vehicle plate number = as stored in the tachograph.

VehicleID = the vehicle ID.

Important Information:

The file name is created by PikoLoad.

The date and time is the date and time of the download of the file from the tachograph (=date/time from the "Overview" and not from the "activities").

Note:

If the time is 0000, the PikoLoad could not download the data at this day (it has been downloaded later). The time is not from the "Overview"

Example:

M_20100704_0000__M-PS1000____2VF154ANA735752629.DDD

This file has been downloaded on 06.07.2010 and has been backdated as the vehicle has been not used (= ignition off) on 05.07.2010.

Content of the mass memory files in our example:

M_20100523_1053__M-PS1000____2VF154ANA735752629.DDD (Installation-DDD)

Name	Period of activities	Remark
Overview / Überblick	from 23.05.2010	the date/time of download
Aktivitäten / Activities	21.02.2010 until 22.05.2010	Each day is digital signed. Last day is the day before the download This is the installation file with up to 91 day to the past
Ereignisse/Fehler / Event/Faults	from 23.05.2010	the date/time of download
Techn.Daten / Techn. Data	from 23.05.2010	the date/time of download

M_20100606_0101__M-PS1000____2VF154ANA735752629.DDD:

Name	Period of activities	Remark
Overview / Überblick	from 06.06.2010	the date/time of download
Aktivitäten / Activities	23.05.2010 until 05.06.2010	Each day is digital signed. Last day is the day before the download
Ereignisse/Fehler / Event/Faults	from 06.06.2010	the date/time of download
Techn.Daten / Techn. Data	from 06.06.2010	the date/time of download

M_20100620_0103__M-PS1000____2VF154ANA735752629.DDD

Name	Period of activities	Remark
Overview / Überblick	from 20.06.2010	the date/time of download
Aktivitäten / Activities	06.06.2010 until 19.06.2010	Each day is digital signed. Last day is the day before the download
Ereignisse/Fehler / Event/Faults	from 20.06.2010	the date/time of download
Techn.Daten / Techn. Data	from 20.06.2010	the date/time of download

M_20100704_0000__M-PS1000____2VF154ANA735752629.DDD

Name	Period of activities	Remark
Overview / Überblick	from 06.07.2010	the date/time of download
Aktivitäten / Activities	20.06.2010 bis 03.07.2010	Each day is digital signed. Last day is the day before the download
Ereignisse/Fehler / Event/Faults	from 06.07.2010	the date/time of download
Techn.Daten / Techn. Data	from 06.07.2010	the date/time of download

Note: Backdated

M_20100707_0818__M-PS1000____2VF154ANA735752629.DDD (im "actual" Ordner)

Name	Period of activities	Remark
Overview / Überblick	from 07.07.2010	the date/time of download
Aktivitäten / Activities	04.07.2010 until 06.07.2010	Each day is digital signed. Last day is the day before the download In directory „actual“ max. 13 days
Ereignisse/Fehler / Event/Faults	from 07.07.2010	the date/time of download
Techn.Daten / Techn. Data	from 07.07.2010	the date/time of download

2.3.1 Example for requests concerning mass memory

All examples are based on the storage structure mentioned in paragraph 2.2.

2.3.1.1 List M

Example:

Request: #LISTM,20000101,20100706,0

i.e. Request for the period 01.01.2000 until 06.07.2010 without detailed Speed

Answer: 20100221,20100607,0

i.e. data are available without detailed speed from 21.02.2010 until 06.07.2010

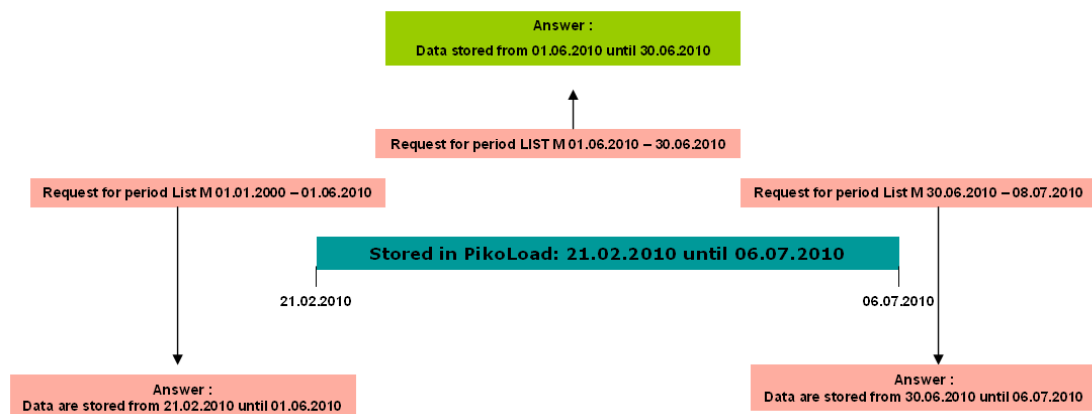


Figure 4: Example for List M

2.3.1.2 REQ M

The REQ M command delivers only one mass memory file with the activities from the requested time period.

Example 1:

Request: #REQM, 20100601,20100630,0

i.e. send **one** mass memory file containing the days/activities for the period from 01.06.2010 until 30.06.2010.

Answer:

pikoload/D___VDO_04__0239_/actual/M_20100707_0818__M-
PS1000___2VF154ANA735752629.DDD

i.e. You will get **one** file that contains the days/activities from 01.06.2010 until 30.06.2010 with the most actual Overview, Event/Faults and Technical Data (all from 07.07.2010 08.18 hours UTC).

Note

The file name contains the date/time of the most actual "Overview" independent from the date/time of the activities in this file.

Please note that in case of requesting more than one time from the vehicle with different requested time periods, you will get always the same file name, i.e. an already existing file will be overwritten.

Example 2:

Request: #REQM, 20000101,20100630,0

i.e. send **one** mass memory file containing the days/activities for the period from 01.01.2000 until 01.06.2010.

Answer:

Pikoload/D___VDO_04___0239_/actual/M_20100707_0818___M-
PS1000___2VF154ANA735752629.DDD

i.e. You will receive one file containing available activities for the time period 01.01.2000 until 01.06.2010 (requested) with the most actual "Overview", the most actual Event/Faults and technical details (from 07.07.2010 08.18 hours).

In this example the file contains the activities from 21.02.2010 until 01.06.2010.

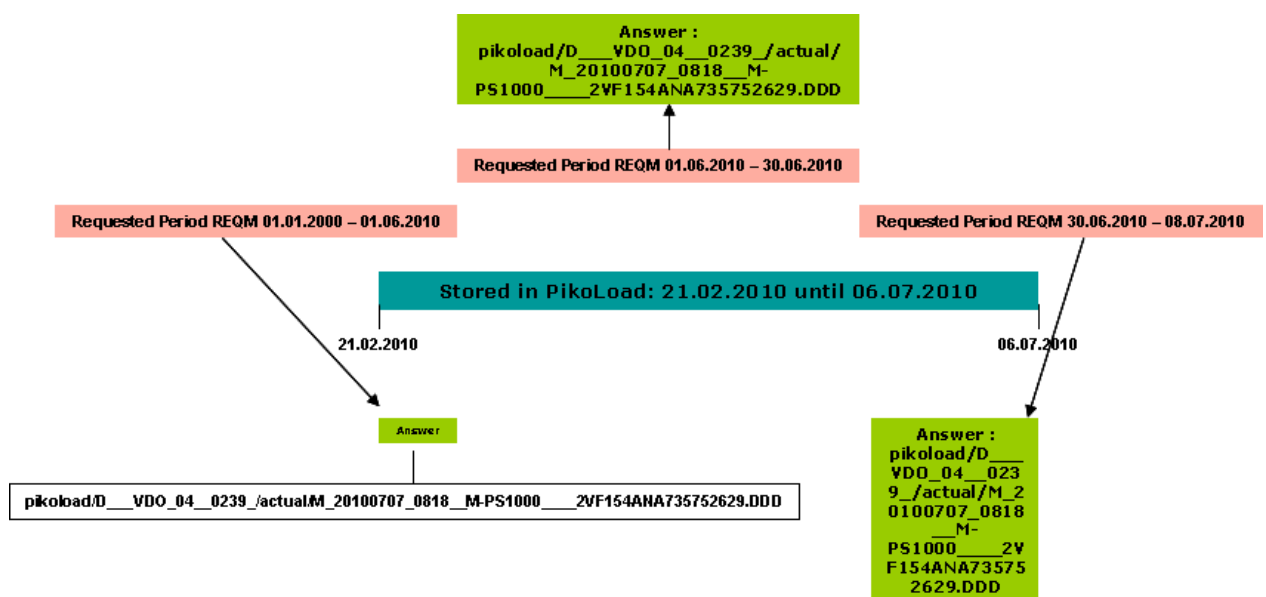


Figure 5: Example for REQ M

2.3.1.3 REQ DDD

The REQ DDD command delivers files from the memory of PikoLoad and is related to the date/time in the file name.

Example 1:

Request: #REQDDD,20100601,20100630,1,1,1,0,1,0,0,0

i.e. send all „archived“ mass memory files from PikoLoad for the period („period of „archived“) from 01.06.2010 until 30.06.2010 without detailed Speed

Answer:

pikoload/D___VDO_04___0239_/M_20100620_0103___M-
PS1000___2VF154ANA735752629.DDD

pikoload/D___VDO_04___0239_/M_20100606_0101___M-
PS1000___2VF154ANA735752629.DDD

Attention:

There are days (from 20.06.2010 until 30.06.2010) of the requested period missing as these days are not covered in a complete 14 days-DDD.

Example 2:

Request: #REQDDD,20000101,20100601,1,1,1,0,1,0,0,0

i.e. send all „archived“ mass memory files for the period from 01.01.2000 until 01.06.2010 without detailed speed.

Answer:

pikoload/D__VDO_04_0239_/M_20100523_1053__M-
PS1000__2VF154ANA735752629.DDD

This file contains the activities from 21.02.2010 until 22.05.2010

Attention:

There are days (from 23.05.2010 until 01.06.2010) of the requested period missing as these days are not covered in a complete 14 days-DDD.

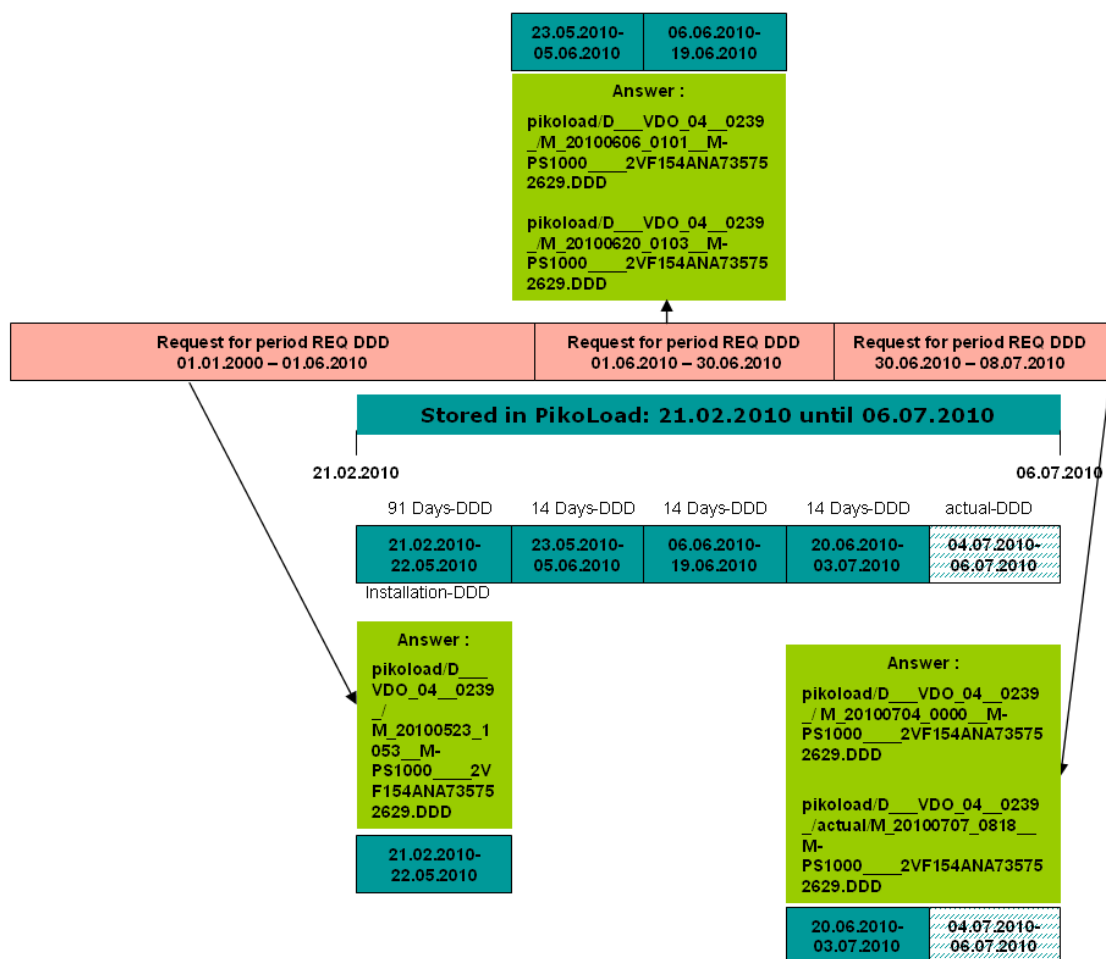


Figure 6: Example for REQ DDD

2.3.2 Recommendations

If you do not know which days are missing for a complete archive we recommend to use the REQ M. Important is that you check before using REQ M with LIST M what days/activities are available.

If you want to use the concept for archiving the data from PikoLoad we recommend to use the REQ DDD as you always get 14 days /activities – DDD: But you have to take care of the correct period for your request to get a complete archive.

2.4 Driver card data

Nomenclature of the driver card files:

C_YYYYMMDD_HourMinute_SlotNo._DriverCardNo..DDD

YYYY = Year

MM = Month

DD = Day

HourMinute = Time (UTC)

DriverCardNo. = main number of the driver card (13 digits)

Important Information:

The file name is created by PikoLoad.

The date and time is the date and time of the download of the file.

Example:

C_20100503_0530_Slot_1_VDO_05__3255_.DDD

This file has been downloaded on 03.05.2010 at 05.30 Uhr (UTC) from Slot 1 and contains the content of the driver card with the number VDO_05__3255.

Attention:

Driver card files are moved from the directory „actual“ after 28 days to the higher level directory if it is not downloaded any more (e.g. the driver does not drive this vehicle any more).

Example 1:

C_20100503_0530_Slot_1_VDO_05__3255_.DDD

C_20100517_0740_Slot_1_VDO_05__3255_.DDD

The driver card with the number VDO_05__3255 was downloaded the first time on 03.05.2010 and has been “archived”. The last download was made on 17.05.2010. That means that the file was in the directory “actual” until 14.06.2010 and has been moved to the higher ranked directory (archived”) at this date.

Example 2:

C_20100705_0825_Slot_2_VDO_05__3288_.DDD

This driver card has been shortly inserted in the tachograph and has been downloaded only once as it is not seen in the directory „actual“.

Example 3:

C_20100707_0950_Slot_1_VDO_05__3266_.DDD in directory „actual“

If this driver card will be not downloaded any more until 04.08.2010 it will be moved to the higher ranked directory.

2.4.1 Example for the download of the driver card from the tachograph

The PikoLoad downloads a driver card inserted in the tachograph (slot1 and/or slot 2) regularly every 10 minutes.

2.4.1.1 List C

The LIST C command delivers a file-ID list of the stored driver card files from the directories and in addition the last downloaded filename per driver card from the requested time period.

Example 1:

Request: #LISTC,20100701,20100707

Delivers the FileID-list for all driver card data stored in PikoLoad during the requested period from 01.07.2010 until 07.07.2010 (not the period of the content of the driver card)

Answer:

```
0D56444F5F30355F5F333237375F4C2C43F8,  
0D56444F5F30355F5F333237375F4C336818,  
0D56444F5F30355F5F333234345F4C305240,  
0D56444F5F30355F5F333234345F4C30D328,  
0D56444F5F30355F5F333236365F4C319628,  
0D56444F5F30355F5F333236365F4C344DC8,  
0D56444F5F30355F5F333236365F4C31634C,  
0D56444F5F30355F5F333238385F4C3196DC
```

i.e.

```
C_20100701_0730_Slot_1_VDO_05__3277_.DDD,  
C_20100706_1730_Slot_2_VDO_05__3277_.DDD,  
C_20100704_0920_Slot_1_VDO_05__3244_.DDD,  
C_20100704_1830_Slot_1_VDO_05__3244_.DDD,  
C_20100705_0822_Slot_1_VDO_05__3266_.DDD,  
C_20100707_0950_Slot_1_VDO_05__3266_.DDD,  
C_20100705_0445_Slot_3_VDO_05__3266_.DDD,  
C_20100705_0825_Slot_2_VDO_05__3288_.DDD,
```

Example 2:

Request: #LISTC,20100706,20100706

Delivers the FileID-list for all driver card data stored in PikoLoad during the requested period from 06.07.2010 until 06.07.2010 ("yesterday")

Answer:

0D56444F5F30355F5F333237375F4C336818,
0D56444F5F30355F5F33323838204C32F090

i.e.

C_20100706_1730_Slot_2_VDO_05__3277_.DDD, from "actual"

C_20100706_0900_Slot_1_VDO_05__3288_.DDD (was on 06.07.2010 in „actual“-directory)

2.4.1.2 Req C

Example:

Request: #REQC,0D56444F5F30355F5F333237375F4C336818<cr><lf>

i.e. send the driver card file C_20100704_1830_Slot_1_VDO_05__3244_.DDD.

Answer: C_20100704_1830_Slot_1_VDO_05__3244_.DDD

Delivers the file C_20100704_1830_Slot_1_VDO_05__3244_.DDD

2.4.1.3 Req DDD

Example:

Request: #REQDDD,20100705,20100707,0,0,0,0,0,1,1,1

i.e. send all driver card files which are downloaded from 05.07.2010 until 07.07.2010 from slot 1, slot 2 and slot 3 (from PikoLoad)

Answer: Files

C_20100705_0822_Slot_1_VDO_05__3266_.DDD, from "Archive"

C_20100707_0950_Slot_1_VDO_05__3266_.DDD, from "actual"

C_20100705_0445_Slot_3_VDO_05__3266_.DDD, from „__pikosys_cards“

C_20100705_0825_Slot_2_VDO_05__3288_.DDD, from "Archive"

C_20100706_0900_Slot_1_VDO_05__3288_.DDD (was on 06.07.2010 in „actual“)

C_20100707_1000_Slot_1_VDO_05__3266_.DDD actual downloaded

2.4.2 Example for the download of the driver cards at PikoLoad

This is a special case if PikoLoad is used in vehicles without a remote downloadable tachograph. In this case the driver has to insert his driver card into the PikoLoad and to wait until it is downloaded.

After the download the data are available for a bord computer.

The PikoLoad slot is indicated with slot 3 in the filename.

The examples of the paragraphs 2.4.1.1. to 2.4.1.3 apply accordingly.

If the PikoLaod is not connected to a tachograph you will only get driver card data from slot 3.

The request with REQDDD is:

#REQDDD,20100705,20100707,0,0,0,0,0,0,0,1

And delivers the driver card filei:

C_20100705_0445_Slot_3_VDO_05__3266_.DDD

2.4.3 Recommendations

You can get the driver card data in different manners.

If you know the driver card number of the most actual downloaded driver card, you can send the List C command to all vehicles with the actual date. You will receive the answer from the vehicle in which the driver card is inserted.

You can as well request (REQDDD) all driver card data downloaded in a one week period in a pre-defined interval (e.g. every Monday)

If you like to use the PikoLoad "archive" you can request the mass memory data and driver card data with one request (REQDDD and corresponding parameters)

2.5 TCO –Status Information

The TCO status information is only available if ignition is on.

If a value is not available or not used it is sent as FF.

NOTE: All values are transmitted from the tachograph and are not computed in any way by PikoSys. The use of the values for calculation of legal matters is not guaranteed and is on your own risk.

TCO data are updated every minute by PikoLoad!

Description TCO Status:

Byte 1: TCS1
Byte 2-7: Date/Time (UTC)
 Byte 2: Seconds
 Byte 3: Minutes
 Byte 4: Hours
 Byte 5: Month
 Byte 6: Day
 Byte 7: Year
Byte 8: TCS2
Byte 9-12: HRDTV
Byte 13: D1WS
Byte 14: D2WS
Byte 15-33: D1I (ASCII)
 Byte 15-17: issuing member state
 Byte 18-33: card number
Byte 34-35: D1CDT
Byte 36: D1TRS
Byte 37-38: D1CBT
Byte 39-40: D1CDOSA
Byte 41-42: D1CDTPACW
Byte 43-61: D2I (ASCII)
 Byte 43-45: issuing member state
 Byte 46-61: card number
Byte 62-63: D2CDT
Byte 64: D2TRS
Byte 65-66: D2CBT
Byte 67-68: D2CDOSA
Byte 69-70: D2CDTPACW

2.5.1 Example TCO-Status

Request: #REQTCO<cr><lf>

i.e. requests the TCO Status information

Answer: Binary-Data

#x31 TCS1, Date/Time (UTC), TCS2, HRDTVD, D1WS, D2WS, D1I, D1CDT, D1TRS,
D1CBT, D1CDOSA, D1CDTPACW, D2I, D2CDT, D2TRS, D2CBT, D2CDOSA, D2CDTPACW

3 Operation with Remote company card

3.1 Remote Authentication

See Development manual

3.2 FMS-Data (if available in the vehicle)

See Paragraph 2.1

3.3 Mass memory data

3.3.1 Request and List commands

See Paragraph 2.3 ff

Attention:

Please note that the request for data is only possible in remote operation if an authentication has been made before. This is even necessary if the data are already downloaded.

3.3.2 Special case

If you need a not completed mass memory file (from actual day) you can request it at PikoLoad.

Example:

REQDDD,today,today,1,1,1,0,0,0,0,0

Attention:

This DDD-File cannot be archived as the actual day is not finished.

This DDD-File is not stored in PikoLoad. It is requested direct from the tachograph with the actual authentication, therefore it takes some minutes until the file is ready.

3.4 Driver card data

3.4.1 Driver card data downloaded from tachograph

See Paragraph 2.4 ff

3.4.2 Driver card downloaded from PikoLoad

See Paragraph 2.4.2 ff

3.5 TCO Statusmeldung

See Paragraph 2.5 ff

4 Helpful Tools / Tips

4.1 Updates

4.1.1 Update using an USB-Stick

Be sure that the unit is connected to the power supply.

Note: If the unit is already installed in a vehicle and in operation it should be connected in the correct way.

Be sure that the ignition signal is on at the unit.

Note: If the unit is already installed in a vehicle, switch on the ignition.

Remove any inserted card from the unit.

Remove any inserted USB-Stick from the unit.

Copy the files „pikosys0.bin“ and possibly „service.pss“ to a formatted (preferred FAT32) and empty USB-Stick to the main (root) directory.

Insert this USB-stick in the unit.

Important: Be sure that the power supply and the ignition signal is permanent on!

After recognition of the update file the unit will start automatically the update procedure. You do not have to do anything.

Check the LED display after insertion of the USB-stick.

The duration of the update is in normal case not longer than 1 minute.

Remove the USB-stick from the unit – the update should be finished.

After a successful update the files „pikosys0.bin“ and possibly „service.pss“ will be deleted automatically on the USB-stick.

You will find on the USB-stick the following file:

„version.txt“.

The content of the file is:

SoftwareVersion=xx.xx.xx

ProductNumber=pikosys-00-R2

SerialNumber=G-09xxxxxx

HardwareRevision=R2

Config=aa,bb,cc,ddd,ee,ff,gggg,hhhh,ii,j (not possible to change)

4.1.2 Remote Update

Command to transmit a new firmware to the PikoLoad (remote update)

#FIRM,CNT,LEN,DATA,CRC<cr><lf>

Header:	#FIRM
Separator:	','
Block Counter (CNT):	xxxx ₁₆ starting with 0000 ₁₆
Separator:	','
Length (LEN):	max 40 ₁₆ , 00 ₁₆ ...3F ₁₆ = last Packet
Separator:	','
Data (DATA):	up to 128 Hex-Character
Separator:	','
Checksum (CRC):	2 Hex-Character
End Mark:	<cr><lf>

Example:

#FIRM,0000,40,5049....87,90<cr><lf>

CNT = 0 => 1. Block

LEN = 40₁₆ => 64 Data Byte à 2 Hex-Character will follow

DATA=5049 ... 87 => 64 Daten Byte à 2 Hex-Character

CRC = 90₁₆ => Checksum

Note:

**The new firmware is not active after the successful transmission.
The new firmware will be active after sending the update command.**

Command to update the PikoLoad with the transmitted firmware

Header: #UPDATE

End mark: <cr><lf>

Remark:

There is no answer to the command UPDATE!

Please check with command VERSION.

Attention:

The command UPDATE will be ignored during ignition off!

4.2 Service commands

4.2.1 Check version

This command can be used remote and with an USB-Stick.

It is used to get the information about the active SW-Version from PikoLoad.

4.2.1.1 Remote request

Request for the actual software version number

Header: #VERSION

End mark: <cr><lf>

Example:

Request: #VERSION<cr><lf>

Answer: 00.11.00

Format String "xx.yy.zz" always 8 characters

xx = Indicator (9x = Evalkit)

yy = Version number

zz = Version sub-number

Example:

00.11.00 = PikoLoad Software version 11.00

4.2.1.2 Using an USB-Stick

Filename: Version.PSS

Content of the File: ACTION:GetVersion<CR><LF>

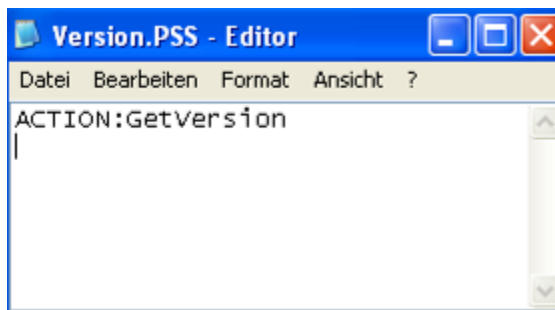


Figure 7: Content of the file Version.PSS

Plug the USB-stick containing the file Version.PSS (content above) in the PikoLoad.

The result will be stored on the USB-Stick in the file Version.txt and can be read with an editor.

Using the USB-Stick delivers as well the information about the used hardware.

Example:

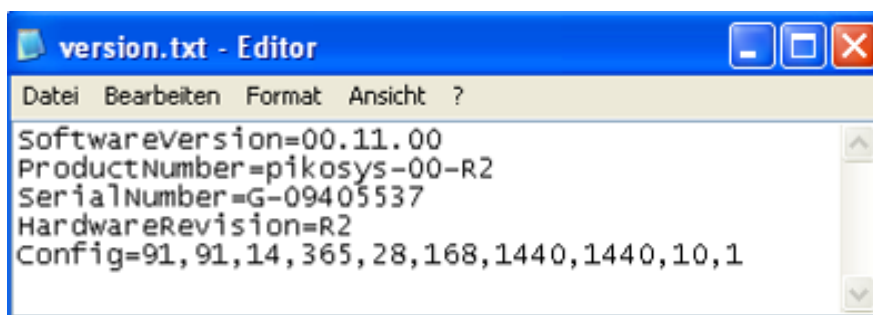


Figure 8: Result request version

4.2.2 EventLog

This command is only available for the use with an USB-stick.

The PikoLoad stores some events internal which can be helpful to identify errors.

Filename: EventLog.PSS

Content of the File: ACTION:GetEventLog<CR><LF>

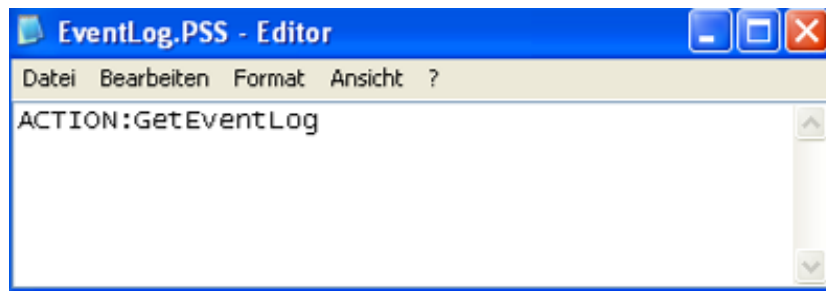


Figure 9: Content of the file EventLog.PSS

Plug the USB-Stick containing the file EventLog.PSS in the PikoLoad.

The result is stored on the USB-Stick in the file eventlog.txt and can be read with an editor.

Example:

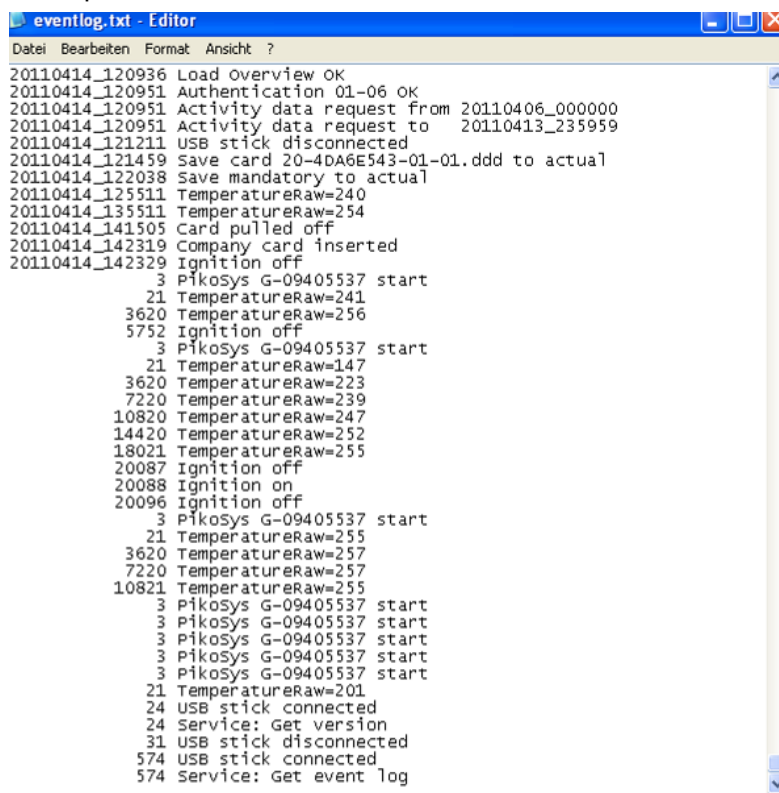


Figure 10: Result request EventLog

4.2.3 Mem-dump

This command is only available for the use with a USB-stick.

Attention:

The storage of the memory will take some minutes.

Please do not remove the USB-Stick during this command.

This command will store the total memory of PikoLoad to the USB-stick.

Filename: MemDump.PSS

Content:

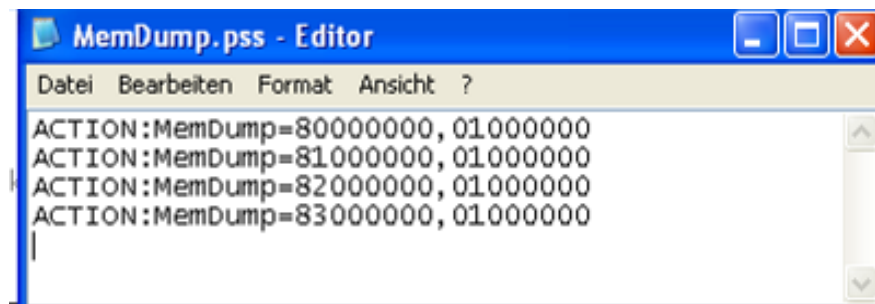


Figure 11: Content of the file MemDump.PSS

The result should be sent to PikoSys GmbH. Only PikoSys GmbH is able to interpret the content of the memory.

Example:

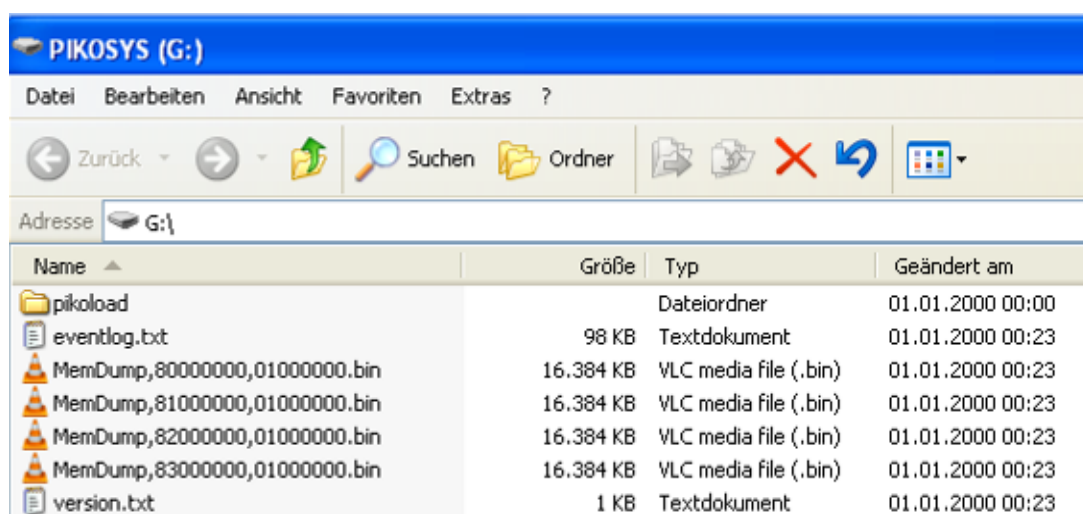


Figure 12: Result of MemDump on the USB-Stick

4.2.4 Reset

This command is only available remote.

The command to reset the program of the PikoLoad

Header: #PIKOSYS
End mark: <cr><lf>

Note:

There is no answer to the command reset!

Example:

Request: #PIKOSYS<cr><lf>

This command is as well used for the Update of PikoLoad

4.2.5 Remote Download Test

Remark:

The Remote Download Test cannot be used with remote company card

4.2.5.1 Per USB-Stick

Please remove all cards from the PikoTest and the tachograph before starting a Remote Download Test.

Be sure that the PikoTest is connected to power and the ignition is on.

Please do not switch off ignition during the test run to avoid errors.

Plug in the USB-Stick containing the following special file:

File name: RemDwlTest.PSS

Content of the file: ACTION:RemDwlTest<CR><LF>

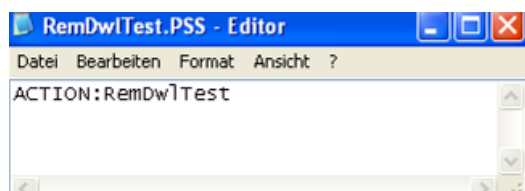


Figure 13: Content of the file for Remote Download Test

Please insert a Company Card.

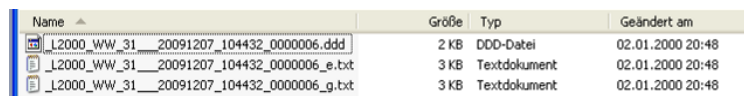
Please note:

- The file has to be stored in the main directory of the USB-Stick
- After the Remote Download test run the file will be deleted from the USB-Stick.

The test starts automatically (check LED display) after plugging in the USB-Stick containing the special file.

After the test run a report (see item 2.7.2) is saved on the USB-Stick. The end of the test run is indicated by the LED display. Remove the USB-Stick now.

The test report can be found in the directory "pikotest":



Name	Größe	Typ	Geändert am
_L2000_WW_31____20091207_104432_0000006.ddd	2 KB	DDD-Datei	02.01.2000 20:48
_L2000_WW_31____20091207_104432_0000006_e.txt	3 KB	Textdokument	02.01.2000 20:48
_L2000_WW_31____20091207_104432_0000006_g.txt	3 KB	Textdokument	02.01.2000 20:48

Figure 14: Content of the directory "pikotest"

File name:

registration no. (if exists)_Date_Time_sequential number.DDD

The „.DDD file“ consists of:

- Overview
- Technical Data

This file can be read by a DDD software.

File name of the result:

registration no. (if exists)_Date_Time_sequential number _language.txt

This file consists of the test report in the indicated language and can be opened with any editor.

- g : for German language
- e : for English language

4.2.5.2 Per RS232

Header: #REMDWLTEST
End Mark: <cr><lf>

It is a precondition that a valid company card is inserted in the PikoLoad. The result of the test is sent via RS232 as text and only in English (no DDD).

Hint:

An existing authentication will be closed or interrupted.

A new authentication is started by a company card inserted in the PikoLoad.

The result of the test is not stored on a USB Stick. It is sent via RS232.

Example 1: English

File „_L2000_WW_31____20091207_104432_0000006_e.txt“:

```

Result RDL-Test PikoTest/PikoLoad
Date/Time: 07.12.2009 10:44:32
Vehicle Registration Number: <01>L2000 WW 31
VIN: 0
Country of registration: F
Status card slot 1: Driver card
Status card slot 2: No card

1. Total Result
* Remote Download Test: Successful

2. Detailed Results
* Diagnostic Session: Successful
* Authentication: Successful
* Download
- Overview: Successful
- Technical Data: Successful

3. Overview Tacho Informationen
* Vehicle Unit Data
- Manufacturer: ACTIA
- Address: 25 chemin de Pouvoirville TOULOUSE
- Partnumber: AC921872
- Serial number: 9624
- Firmware / Date: 0611 / 20.07.2009 16:36:10
- Manufacturing date: 17.04.2008 12:07:33
* Calibration Data
- Calibration purpose: Activation
- Workshop name: Atelier 2639 TEST
- Workshop address: CP VILLE
- Card number: 2000000002639000
- W / K: 4000 / 8000
- L: 64000
- Tyre size:
- Overspeed setting: 90
- Old odometer value: 0
- New odometer value: 0
- Old time setting: 06.08.2008 12:32:16
- New time setting: 06.08.2008 12:32:16
- Next calibration date: -
* Company locks and control activities
- No. of company locks: 9
- No. of control activities: 1
- Locked to company
Name: Siemens VDO Automotive AG
Address: Test Unternehmen 0239
- Company lock from: 12.08.2009 09:50:27
- Company lock to: -
- Card Number: VDO 04 0239 000
* Downloadable Period
- Start of period: 06.08.2008 12:32:00
- End of period: 07.12.2009 00:00:00
* Previous download
- Date / Time: 07.12.2009 08:59:44
- Card number: VDO 04 0239 000

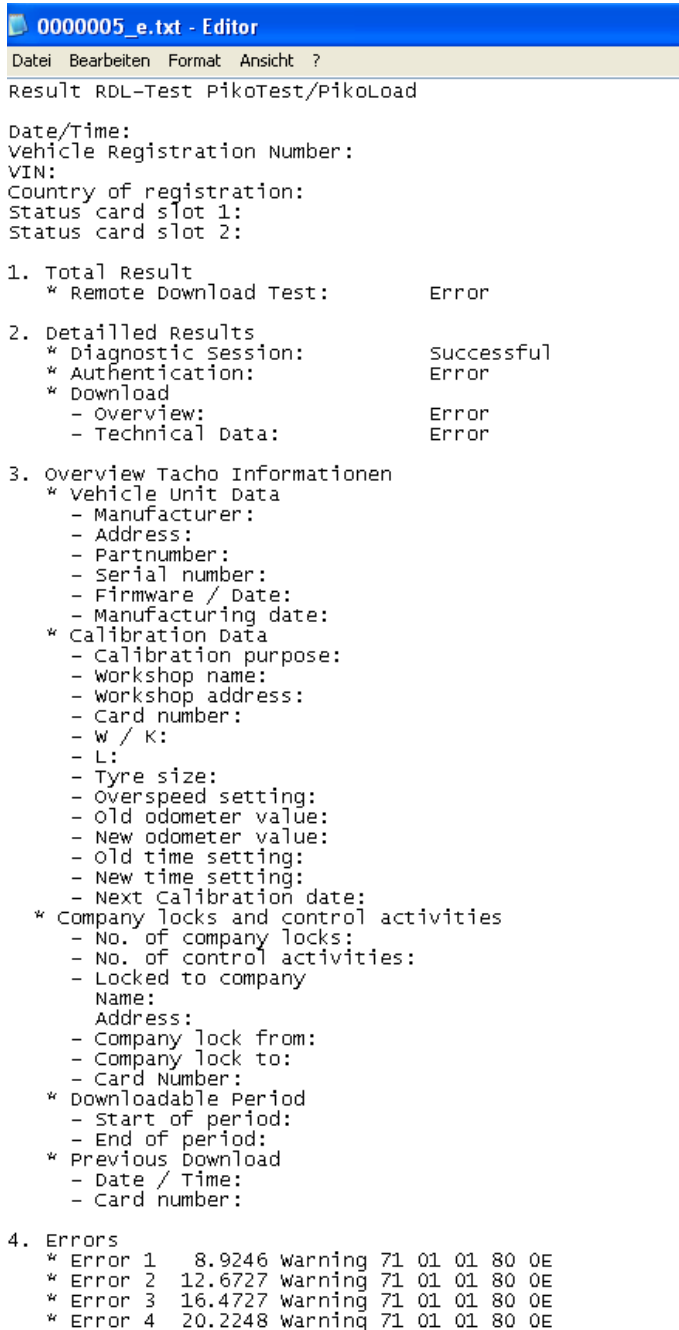
4. Errors
* Error 1 -
* Error 2 -
* Error 3 -
* Error 4 -
    
```

Figure 15: File contents Remote Download Test English

Beispiel 2: Test with errors

File: „0000005_e.txt“

If the remote authentication fails the file name consists of a sequential number only (registration no, date, time are not known)



```

0000005_e.txt - Editor
Datei Bearbeiten Format Ansicht ?
Result RDL-Test PikoTest/PikoLoad

Date/Time:
Vehicle Registration Number:
VIN:
Country of registration:
Status card slot 1:
Status card slot 2:

1. Total Result
  * Remote Download Test:      Error

2. Detailled Results
  * Diagnostic Session:      Successful
  * Authentication:          Error
  * Download
    - Overview:              Error
    - Technical Data:        Error

3. Overview Tacho Informationen
  * Vehicle Unit Data
    - Manufacturer:
    - Address:
    - Partnumber:
    - Serial number:
    - Firmware / Date:
    - Manufacturing date:
  * Calibration Data
    - Calibration purpose:
    - Workshop name:
    - Workshop address:
    - Card number:
    - W / K:
    - L:
    - Tyre size:
    - Overspeed setting:
    - Old odometer value:
    - New odometer value:
    - Old time setting:
    - New time setting:
    - Next Calibration date:
  * Company locks and control activities
    - No. of company locks:
    - No. of control activities:
    - Locked to company
      Name:
      Address:
    - Company lock from:
    - Company lock to:
    - Card Number:
  * Downloadable Period
    - Start of period:
    - End of period:
  * Previous Download
    - Date / Time:
    - Card number:

4. Errors
  * Error 1  8.9246 warning 71 01 01 80 0E
  * Error 2 12.6727 warning 71 01 01 80 0E
  * Error 3 16.4727 warning 71 01 01 80 0E
  * Error 4 20.2248 warning 71 01 01 80 0E
  
```

Figure 16: File content with errors

There are up to 4 received error messages listed in point 4.

The test was made with an expired company card in this example. The tachograph tries up to 5 times to read the company card. After these tries the following error message (positive response in the documentation) is sent: „ 71 01 01 80 0E“

In the document „User Guide for Remote Download“ the message is indicated as:

- Company Card expired
- Bad card type (not a company card)
- Company Card corrupted
- Card reader use different T=0/T=1 than the VU is requesting

0x71 01 01 80 0E	The VU informs that the card authentication has failed	Remote Authentication not valid TAuth not valid	Company Card expired	- System should send Close Authentication - Replace the expired company card with a new valid company card and start Remote Authentication again Expired, failed or corrupted company cards must be sent back to the relevant Member State Authority.
			Bad card type (not a Company Card)	- System should send Close Authentication - Replace the bad card with a valid company card and start Remote Authentication again

Remote card authentication and data downloading

Vers. 01.00 dated 15/09/09

53/68

Positive Response Code	Description	Status VU	Possible cause(s)	Recommended system behaviour
			Company Card corrupted (e.g. invalid card public key, invalid card member state public key, failed card certificate verification, failed card member state certificate verification, card type different from 'company', failed card authentication token verification)	- System should send Close Authentication - Replace the bad card with a valid company card and start Remote Authentication again Expired, failed or corrupted company cards must be sent back to the relevant Member State Authority.
			Card reader use different T=0/T=1 than the VU is requesting	Check the application for correct implementation of the communication protocol with the card reader (see Annex 3)

Figure 17: Excerpt from "User Guide for Remote Download"

4.2.6 FMS-Test

By inserting a FMS-Test card the operating mode for PikoLoad is activated.
Please check the LED display after inserting the FMS-Test card.

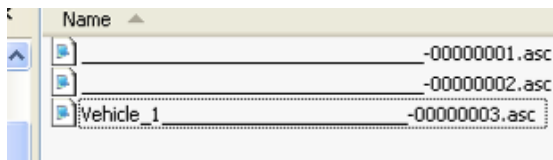
The FMS-Test starts with standard configuration by ignition on and a plugged USB-stick.
The configuration (e.g. duration of the test) can be changed on the USB-stick per test via internet (www.fms-test.com).

The record starts after plugging the USB-stick in the PikoLoad.

The recorded data are on the USB-stick in the folder "pikotest".
The data format is ASC.

The description of the format is published on www.fms-test.com.

Each file gets its own consecutive number:



Name	Größe	Typ	Geändert am
-00000001.asc	4 KB	ASC-Datei	01.01.2000 00:03
-00000002.asc	2 KB	ASC-Datei	01.01.2000 00:06
Vehicle_1 -00000003.asc	48 KB	ASC-Datei	01.01.2000 00:11

Figure 18: Example result FMS test

The recorded data can be analysed on www.fms-test.com.

If the vehicle ID is present in the FMS data then the file gets the name of the vehicle ID (e.g. "Vehicle_1").

Note:

The recording of the FMS data can be cancelled by removing the FMS-Test card.
The PikoLoad returns immediately to the function "download".

Please do not forget to put the company card back to the PikoLoad if you are using the system with company card inserted in PikoLoad.

4.2.7 Request actual Status PikoLoad

It can be helpful to get the actual status of PikoLoad for service pupose.

Header: #STATUS
End mark: <cr><lf>

Example:

Request: #STATUS<cr><lf>

Answer:

STATUS PIKOSYS

CAN1: FMS 0100

CAN2: disconnected

Cardslot: Company card

USB: Empty

TCO: Authenticated

LeD(A): GREEN

LeD(I): RED

Means:

CAN1 at PikoLoad (green connector) delivers FMS Version 0100

CAN2 at PikoLoad is not connected

Cardslot: a Company card is inserted in the cardslot of PikoLoad

USB: no USB-Stick is plugged in

TCO: the status is authenticated at the tachograph

LeD(A) = Led outer = Green = Company Card

LeD(I) = Led inner = Red = Tacho is not locked to Company Card