



## **AP-3.9**

### **Picture File**

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## DOCUMENT STATUS

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## REVISION HISTORY

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1.0	4 July 2024	NPRA	New document. Content from old doc. 4.3, cleaned up and clarified. No actual change.

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## **1 PREFACE**

This file is produced by the CPE.

Note that in this context the terms “Picture”, “Image” and “Video” are used interchangeably, and may refer to the image file as well as the image itself.

### **1.1 Description**

This document describes the information that shall be stored in the picture files as comments, and the information to be superimposed on the image. The picture format used in AutoPASS is JPEG.

The passage data in the picture files shall be identical to the passage data written in the corresponding transaction files.

### **1.2 Format Versions**

This file format is specific to AutoPASS. It remains unchanged from the original AutoPASS format definition.

### 1.3 File Name Generation

The file name format is:

Pic#####\_P###\_L##\_##\_#E#\_D####\_##\_##\_T##\_##\_N#####.jpg

Name	Number of Char.	Type of value	Begin	End	Definition
Text	3	AlphaN	1	3	"Pic"
Operator ID	6	Numeric	4	9	The AutoASS operator ID. Unique identification of the toll system.
Fixed text	2	AlphaN	10	11	"_P"
Charging Point Number	3	Numeric	12	14	Three digits with leading zero(s).
Fixed text	2	AlphaN	15	16	"_L"
Lane Number	2	Numeric	17	18	Two digits with a leading zero.
Fixed text	1	AlphaN	19	19	"_"
Front/Rear	1	AlphaN	20	20	"F" for picture taken from the front, "R" for rear.
Part of set	1	Numeric	21	21	"1" if part of set/duo. Otherwise "0".
Fixed text	1	AlphaN	22	22	"_"
Spot Test	1	AlphaN	23	23	"S" for spot test picture. Otherwise "X".
Enforcement	1	AlphaN	24	24	"E" for all pictures – legacy parameter.
Test Picture	1	AlphaN	25	25	"T" for test picture. Otherwise "X".
Fixed text	2	AlphaN	26	27	"_D"
Year	4	Numeric	28	31	From the time stamp of the passage.
Fixed text	1	AlphaN	32	32	"_"
Month	2	Numeric	33	34	From the time stamp of the passage.
Fixed text	1	AlphaN	35	35	"_"
Day of month	2	Numeric	36	37	From the time stamp of the passage.
Fixed text	2	AlphaN	38	39	"_T"
Hour	2	Numeric	40	41	From the time stamp of the passage.
Fixed text	1	AlphaN	42	42	"_"
Minutes	2	Numeric	43	44	From the time stamp of the passage.
Fixed text	1	AlphaN	45	45	"_"
Seconds	2	Numeric	46	47	From the time stamp of the passage.
Fixed text	2	AlphaN	48	49	"_N"
SeqVideoPicture	10	Numeric	50	59	The sequence number of the picture. Assigned by the CPE and also used in the TR-file for the corresponding passage. Shall be zero for spot test pictures.
Fixed text	4	AlphaN	60	63	".jpg"

## **1.4 Data formats**

### **1.4.1 Character Set**

The data written to the header of the picture file shall be in ASCII format.

### **1.4.2 Time Stamp Format**

Time stamps in the file body shall be given in local Norwegian time.

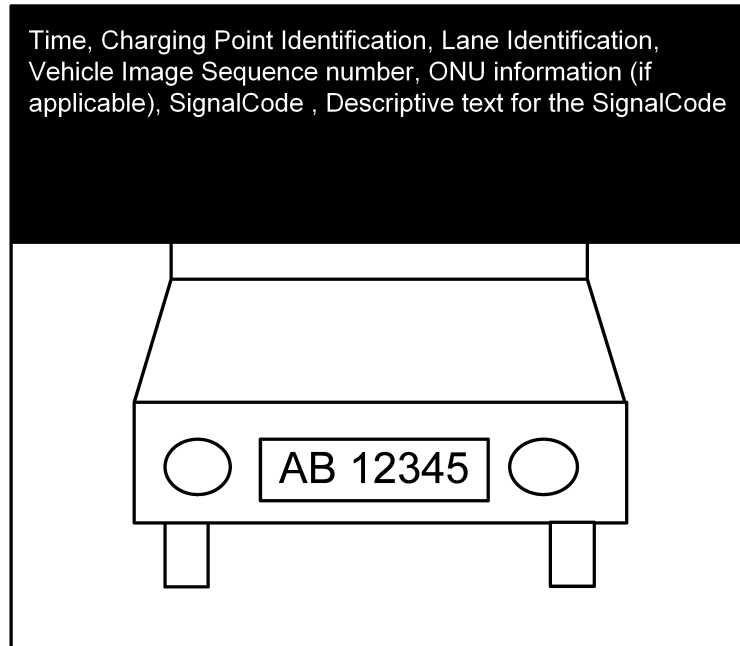
The format of the time stamp is YYYYMMDDhhmmssddd, where:

- YYYY – Year
- MM – Month (01-12)
- DD – Day (01-31)
- hh – Hour (00-23)
- mm – Minute (00-59)
- ss – Second (00-59)
- ddd – Decimal Second (000-999)

## 2 TEXT SUPERIMPOSED ON THE IMAGE

Certain data fields from the transaction record (TR-file) are superimposed as text in the image.

Superimposed text in the obscured area



*Figure 1 - Illustration of an image with a censor bar and superimposed text*

## 2.1 Text Line 1

Name	Number of Char.	Type of value	Begin	End	Definition	Origin	Adjusted	Mandatory or Optional	Value if Nothing	Padding
Time	17	Numeric	1	17	The time of the passage in local time. The format is YYYYMMDDhhmmssddd. 20010115102430123 means January 15, 2001, at 10:24:30.123.	CPE	Right	Mandatory	n/a	n/a
DST	3	AlphaN	18	20	Standard indication of summertime (daylight saving time) described with 3 characters. If the time is adjusted for summertime, the value shall be "DST". Otherwise blanks.	CPE	Left	Mandatory	n/a	Blanks
ChargingPoint	3	Numeric	21	23	Charging point ID.	CPE	Right	Mandatory	n/a	Zeros
Blank	1	AlphaN	24	24			Left	Mandatory	n/a	n/a
Lane	2	Numeric	25	26	ID of the lane where the passage took place.	CPE	Right	Mandatory	n/a	Zeros
Blank	1	AlphaN	27	27			Left	Mandatory	n/a	n/a
SeqVideoPicture	10	Numeric	28	37	Sequential counter of the pictures sent from the CPE to AutoPASS Core. (The CPE generates a set of pictures for every passage, but the pictures are not to be sent to AP Core for all transactions. See AP-1.4.) This counter is generated by the CPE, and the value is sent to AP Core for reconciliation. The counter increments by 1 for every set of pictures that is sent to AP Core. This counter shall also be used as the sequence number in the picture filename. For transactions where images are not to be sent from the CPE, no data shall be given and the value shall not be incremented.	CPE	Right	Mandatory	n/a	Zeros
Blank	1	AlphaN	38	38			Left	Mandatory	n/a	n/a
PAN	19	Numeric	39	57	PAN as coded in the OBE.	OBE	Right	Mandatory	n/a	Blanks
Blank	1	AlphaN	58	58			Left	Mandatory	n/a	n/a
SignalCode	2	Numeric	59	60	The signal code of the passage that the picture is matched to.	CPE	Right	Mandatory	n/a	Zero

## 2.2 Text Lines 2 and 3

Lines two and three contain a descriptive text of the Signal code fetched from Picture Text File, document AP-3.9. One or two lines will be used depending on the length of the text string.



### 3 TEXT IN THE JPEG HEADER

Every picture file shall in its header contain the entire string from the Transaction File for the associated passage. The Transaction File is defined in document AP-3.7.

#### 3.1 JPEG Resources

Routines for adding user data to pictures are described in libraries published by the Independent JPEG Group (IJG). There are libraries for Windows and Unix. The libraries can be downloaded from: <https://www.iijg.org/>

The libraries contain the specification document "libjpeg.doc". The functionality for reading and writing comments in JPEG files is specified in the chapter 'Special markers'. Text in a JPEG picture file shall comply with the following:

- The text shall be placed between the JPEG header and the JPEG image data.
- The text cursor shall be M\_COM = 0xFE (as specified in jdmarker.c).
- After the text cursor there shall be two bytes indicating the length of the text (max 64kb).
- The text is saved in ASCII format.

Two useful applications:

- rdjpgcom.c
- wrjpgcom.c

These files contain source code for reading and writing comments in JPEG files.