

PEAK CAN TRC File Format

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Contents

Version 1.0

Example.....	14
General	14
Changes compared to Version 2.0.....	14
Columns	15

Version 1.0

Used by: PCAN-Explorer 3.0, PCAN-Trace 1.0.

Example

General

Comment lines prefixed with a semicolon will be ignored while loading Trace file.

Columns are separated with blanks.

One message/warning/error per line.

Supported protocols: CAN.

Columns

- 1) Index of recorded message.
- 2) Time offset since start of the trace, in milliseconds.
- 3) CAN-ID (Hex):
 - 4 digits for 11-bit CAN-IDs (0000-07FF).
 - 8 digits for 29-bit CAN-IDs (00000000-1FFFFFFF).
 - Special case: "FFFFFFFF" for Error Warnings.
- 4) Data Length Code (0-8).
- 5) Data Bytes (0-8):
 - For Remote Requests: "RTR".
 - For Error Warnings: 2-byte or 4-byte Error Warning Code in Motorola format. Unused bytes filled with "--". Optional: Short names of the Error Warning flags at the end of the line, ignored while loading Trace file.
 - For Error Frames: "ERROR" followed by 4 data bytes of Error Frame message. See **Error Frames**.

Error Frames

All relevant information of Error Frames is contained in the CAN ID and 4 data bytes.

ID: Type of Error Frame

- 1 = Bit Error
- 2 = Form Error
- 4 = Stuff Error
- 8 = Other Error

Data Byte 0: Direction

- 0 = Error occurred while sending
- 1 = Error occurred while receiving.

Data Byte 1: Current Position in Bit Stream

- 2 = ID.28 bis ID.21
- 3 = Start of frame
- 4 = Bit SRTR
- 5 = BIT IDE
- 6 = ID.20 bis ID.18
- 7 = ID.17 bis ID.13
- 8 = CRC Sequence
- 9 = Reserved Bit 0
- 10 = Data field
- 11 = Data Length Code
- 12 = Bit RTR
- 13 = Reserved Bit 1
- 14 = ID.4 bis ID.0
- 15 = ID.12 bis ID.5
- 17 = Active Error Flag
- 18 = Intermission
- 19 = Tolerate dominant Bits
- 23 = Error Delimiter
- 24 = CRC Delimiter
- 25 = Acknowledge Slot
- 26 = End of Frame
- 27 = Acknowledge Limiter
- 28 = Overload Flag.

Data Byte 2: RX Error Counter

Current Value of the Receive Error counter.

Byte 3: TX Error Counter

Current Value of the Transmit Error counter.

Version 1.1

Used by: PCAN-Explorer 3.0.2, PCAN-Explorer 4, PCAN-Trace 1.5, PCAN-View 3.

Example

General

Comment lines prefixed with a semicolon will be ignored while loading Trace file, except \$-keywords.

Columns are separated with blanks.

One message/warning/error per line.

Supported protocols: CAN.

Changes compared to Version 1.0

- 1) \$FILEVERSION keyword to store the version of the file format:

Format: *Major.Minor*

Value: 1.1

- 2) \$STARTTIME keyword to store the absolute start time of the trace file:

Format: Floating point, decimal separator is a point.

Value: Integral part = Number of days that have passed since 12/30/1899.

Fractional Part = Fraction of a 24-hour day that has elapsed, resolution is 1 millisecond.

- 3) "Type" column.

Columns

- 1) Index of recorded message.
- 2) Time offset since start of the trace. Resolution: 1/10 milliseconds.
Milliseconds before the decimal separator, 1/10 milliseconds (1 digit) behind the decimal separator.
- 3) Type of message:
"Rx": Message was received.
"Tx": Message was transmitted.
"Warng": Error Warning.
"Error": Error Frame. See **Error Frames** under **Version 1.0**.
- 4) CAN-ID (Hex):
4 digits for 11-bit CAN-IDs (0000-07FF).
8 digits for 29-bit CAN-IDs (00000000-1FFFFFFF).
Special case: "FFFFFFFF" for Error Warnings.
- 5) Data Length Code (0-8).
- 6) Data Bytes (0-8):
For Remote Requests: "RTR".
For Error Warnings: 4-byte Error Warning Code in Motorola format. Optional: Short names of the Error Warning flags at the end of the line, ignored while loading Trace file.
For Error Frames: "ERROR" followed by 4 data bytes of Error Frame message.

Version 1.2

Used by: PCAN-Explorer 5.0 Beta 1.

Example

General

Comment lines prefixed with a semicolon will be ignored while loading Trace file, except \$-keywords.

Columns are separated with blanks.

One message/warning/error per line.

Supported protocols: CAN.

Changes compared to Version 1.1

- 1) Time offset has resolution 1 microsecond.
- 2) "Bus" column.

Columns

- 1) Index of recorded message.
- 2) Time offset since start of the trace. Resolution: 1 microsecond.
Milliseconds before the decimal separator, microseconds (3 digits) behind the decimal separator.
- 3) Bus (1-16).
- 4) Type of message:
"Rx": Message was received.

“Tx”: Message was transmitted.

“Warng”: Error Warning.

“Error”: Error Frame. See **Error Frames** under **Version 1.0**.

5) CAN-ID (Hex):

4 digits for 11-bit CAN-IDs (0000-07FF).

8 digits for 29-bit CAN-IDs (00000000-1FFFFFFF).

Special case: “FFFFFFF” for Error Warnings.

6) Data Length Code (0-8).

7) Data Bytes (0-8):

For Data Frames: Data bytes in hexadecimal notation.

For Remote Requests: “RTR”.

For Error Warnings: 4-byte Error Warning Code in Motorola format. Optional: Short Names of the Error Warning flags at the end of the line, ignored while loading Trace file.

For Error Frames: “ERROR” followed by 4 data bytes of Error Frame message.

Version 1.3

Used by: PCAN-Explorer 5.

Example

General

Comment lines prefixed with a semicolon will be ignored while loading Trace file, except \$-keywords.

Columns are separated with blanks.

One message/warning/error per line.

Supported protocols: CAN, J1939.

Changes compared to Version 1.2

- 1) "Reserved" column.
- 2) J1939 support.
- 3) Header section contains a table of connections/busses.

Columns

- 1) Index of recorded message.
- 2) Time offset since start of the trace. Resolution: 1 microsecond.
Milliseconds before the decimal separator, microseconds (3 digits) behind the decimal separator.

- 3) Bus (1-16).
- 4) Type of message:
 - “Rx”: Message was received.
 - “Tx”: Message was transmitted.
 - “Warng”: Error Warning.
 - “Error”: Error Frame. See **Error Frames** under **Version 1.0**.
- 5) CAN-ID (Hex):
 - 4 digits for 11-bit CAN-IDs (0000-07FF).
 - 8 digits for 29-bit CAN-IDs (00000000-1FFFFFFF).
 - Special case: “FFFFFFFF” for Error Warnings.
- 6) Only used for J1939 protocol. Contains “-“ for CAN busses. For J1939 protocol, contains destination address of a Transport Protocol PDU2 Large Message.
- 7) Data Length Code (0-1785).
- 8) Data Bytes (0-1785):
 - For Data Frames: Data bytes in hexadecimal notation.
 - For Remote Requests: “RTR”.
 - For Error Warnings: 4-byte Error Warning Code in Motorola format. Optional: Short Names of the Error Warning flags at the end of the line, ignored while loading Trace file.
 - For Error Frames: “ERROR” followed by 4 data bytes of Error Frame message.

Version 2.0

Used by: PCAN-View 4.

Example

General

Comment lines prefixed with a semicolon will be ignored while loading Trace file, except \$-keywords.

Columns are separated with blanks.

One message/warning/error per line.

Supported protocols: CAN, CAN FD.

Changes compared to Version 1.3

- 1) New \$COLUMNS keyword. See 'Columns'.
- 2) CAN FD support.
- 3) Separate Type and Direction (Rx/Tx) columns.

Columns

The columns contained in the trace file are specified in the \$COLUMNS parameter in the header section. Each column is identified by an alphabetic, case-sensitive character, separated by commas. The column order cannot be changed, but some columns are optional.

The obligatory column order is as follows, optional columns are enclosed in square brackets:

[N],O,T,I,d,I/L,D

The following columns are possible (in alphabetical order):

‘d’: Direction. Indicates whether the message was received (‘Rx’) or transmitted (‘Tx’).

‘D’: Data. 0-64 data bytes in hexadecimal notation.

For Data Frames (message types DT, FD, FB, FE, BI, see ‘T’ column): Data bytes of message, if Data Length is > 0.

Empty for Remote Request frames (message type RR).

For Hardware Status changes (message type ST): 4-byte status code in Motorola format.

For Error Frames (message type ER): 5 bytes of Error Frame data, see **Error Frames**.

For Error Counter changes (message type EC): 2 bytes of Error Counter data. The first byte contains the RX Error counter, the second byte the TX Error counter.

‘I’: CAN-ID (Hex):

4 digits for 11-bit CAN-IDs (0000-07FF).

8 digits for 29-bit CAN-IDs (00000000-1FFFFFFF).

This column is empty for the message types EC, ER, ST, see ‘T’ column.

‘l’: Data Length (0-64). This is the actual number of data bytes, not the Data Length Code (0..15). Optional. If omitted, the Data Length Code column (‘L’) must be included.

This column is empty for the message types EC, ER, ST, see ‘T’ column.

‘L’: Data Length Code (CAN: 0..8; CAN FD: 0..15).

Optional. If omitted, the Data Length column (‘l’) must be included.

This column is empty for the message types EC, ER, ST, see ‘T’ column.

‘N’: Message number, index of recorded message. Optional.

‘O’: Time offset since start of the trace. Resolution: 1 microsecond.

Milliseconds before the decimal separator, microseconds (3 digits) behind the decimal separator.

‘T’: Type of message:

“DT”: CAN data frame

“FD”: CAN FD data frame

“FB”: CAN FD data frame with BRS bit set (Bit Rate Switch)

“FE”: CAN FD data frame with ESI bit set (Error State Indicator)

“BI”: CAN FD data frame with both BRS and ESI bits set

“RR”: Remote Request Frame

“ST”: Hardware Status change

“EC”: Error Counter change

“ER”: Error Frame.

Error Frames

Error Frames have 5 data bytes that contain all relevant information.

Byte 0: Type of Error Frame

1 = Bit Error

2 = Form Error

4 = Stuff Error

8 = Other Error

Byte 1: Direction

0 = Error occurred while sending
1 = Error occurred while receiving.

Byte 2: Current Position in Bit Stream

2 = ID.28 bis ID.21
3 = Start of frame
4 = Bit SRTR
5 = BIT IDE
6 = ID.20 bis ID.18
7 = ID.17 bis ID.13
8 = CRC Sequence
9 = Reserved Bit 0
10 = Data field
11 = Data Length Code
12 = Bit RTR
13 = Reserved Bit 1
14 = ID.4 bis ID.0
15 = ID.12 bis ID.5
17 = Active Error Flag
18 = Intermission
19 = Tolerate dominant Bits
23 = Error Delimiter
24 = CRC Delimiter
25 = Acknowledge Slot
26 = End of Frame
27 = Acknowledge Limiter
28 = Overload Flag.

Byte 3: RX Error Counter

Current Value of the Receive Error counter.

Byte 4: TX Error Counter

Current Value of the Transmit Error counter.

Version 2.1

Used by: PCAN-Explorer 6.

Example

General

Comment lines prefixed with a semicolon will be ignored while loading Trace file, except \$-keywords.

Columns are separated with blanks.

One message/warning/error per line.

Supported protocols: CAN, CAN FD, J1939.

Changes compared to Version 2.0

- 1) New optional Bus column 'B'.
- 2) New optional Reserved column 'R'.
- 3) J1939 support.
- 4) New EV message type.
- 5) Data Length/Data Length Code columns are not empty for message types ST, EC, ER.

Columns

The columns contained in the trace file are specified in the \$COLUMNS parameter in the header section. Each column is identified by an alphabetic, case-sensitive character, separated by commas. The column order cannot be changed, but some columns are optional.

The obligatory column order is as follows, optional columns are enclosed in square brackets:

[N],O,T,[B],I,d,[R],l/L,D

The following columns are possible (in alphabetical order):

‘B’: Bus (1-16), optional. If Bus column is included, for events the Bus number can be specified as ‘-’ if the event is not associated with a specific bus.

‘d’: Direction. Indicates whether the message was received (‘Rx’) or transmitted (‘Tx’).

‘D’: Data. 0-1785 data bytes in hexadecimal notation.

For Data Frames (message types DT, FD, FB, FE, BI, see ‘T’ column): Data bytes of message, if Data Length is > 0.

Empty for Remote Request frames (message type RR).

For Hardware Status changes (message type ST): 4-byte status code in Motorola format.

For Error Frames (message type ER): 5 bytes of Error Frame data, see **Error Frames** under **Version 2.0**.

For Error Counter changes (message type EC): 2 bytes of Error Counter data. The first byte contains the RX Error counter, the second byte the TX Error counter.

‘I’: CAN-ID (Hex):

4 digits for 11-bit CAN-IDs (0000-07FF).

8 digits for 29-bit CAN-IDs (00000000-1FFFFFFF).

Contains ‘-’ for the message types EC, ER, ST, see ‘T’ column.

‘l’: Data Length (0-1785). This is the actual number of data bytes, not the Data Length Code (0..15). Optional. If omitted, the Data Length Code column (‘L’) must be included.

‘L’: Data Length Code (CAN: 0..8; CAN FD: 0..15; J1939: 0..1785).

Optional. If omitted, the Data Length column (‘l’) must be included.

‘N’: Message number, index of recorded message. Optional.

‘O’: Time offset since start of the trace. Resolution: 1 microsecond.

Milliseconds before the decimal separator, microseconds (3 digits) behind the decimal separator.

‘R’: Reserved. Only used for J1939 protocol. Contains ‘-’ for CAN busses. For J1939 protocol, contains destination address of a Transport Protocol PDU2 Large Message. Optional for files that contain only CAN or CAN FD frames.

‘T’: Type of message:

“DT”: CAN or J1939 data frame

“FD”: CAN FD data frame

“FB”: CAN FD data frame with BRS bit set (Bit Rate Switch)

“FE”: CAN FD data frame with ESI bit set (Error State Indicator)

“BI”: CAN FD data frame with both BRS and ESI bits set

“RR”: Remote Request Frame

“ST”: Hardware Status change

“EC”: Error Counter change

“ER”: Error Frame

“EV”: Event. User-defined text, begins directly after bus specifier.