

## CAN-ETH Protocol Description

This document describes the protocol used for encapsulating CAN messages into TCP/IP datagrams.

### Protocol Description

The *CAN-ETH* gateway sends and receives CAN frames via TCP/IP using UDP datagrams. The default port is 11898.

One UDP datagram can contain up to 16 CAN frames. How CAN messages are embedded in a UDP datagram is shown in the following drawing:

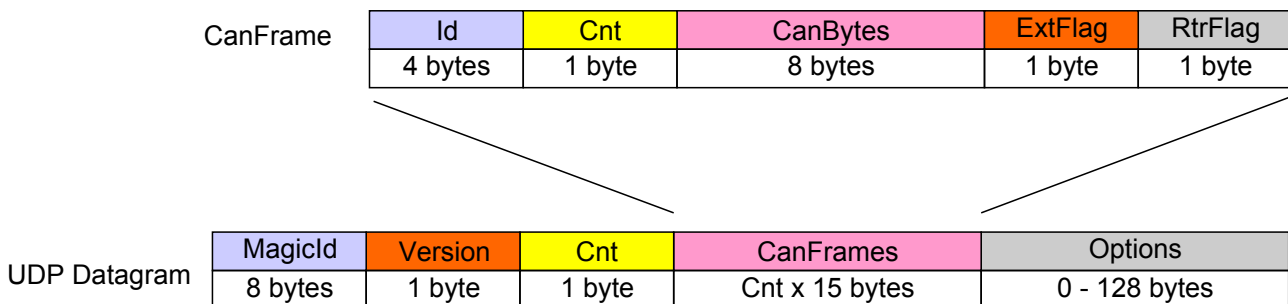


Figure 1: Structure of encapsulated CAN messages

A *CAN-ETH* UDP datagram contains the following fields:

Position	Designator	Content
0	MagicId	The ASCII characters "ISO11898"
8	Version	Version number of this datagram specification. Set to 1.
9	Cnt	Number of CAN frames embedded in this UDP message. Range: 1 to 16.
10	CanFrames	Variable size array of the CAN frames.
10 + Cnt x 15	Options	Array with option bytes. Length can be 0 to 128. Currently not used, should be empty.

Table 1: Elements of a UDP datagram

An encapsulated CAN frame contains the following fields:

Position	Designator	Content
0	Id	CAN identifier as 32-bit integer (least significant byte first, little-endian format)
4	Cnt	Number of data bytes used in the CanBytes array. Range: 0 to 8.
5	CanBytes	Array of CAN bytes (least significant byte first). Always 8 bytes. If less than 8 bytes transmitted, the unused bytes are zero filled.
13	ExtFlag	0/1 Flag which indicates if CAN identifier is 11 bit or 29 bit.
14	RtrFlag	0/1 Flag which indicates a remote transmission frame.

Table 2: Elements of a CAN frame

## Example

The CAN message 18h 22h 3Ah 8Fh 77h 12h 88h 7Dh with identifier 181h is encoded as shown in this example:

Position	Value	Description
0	49h	The ASCII character "I"
1	53h	The ASCII character "S"
2	4Fh	The ASCII character "O"
3	31h	The ASCII character "1"
4	31h	The ASCII character "1"
5	38h	The ASCII character "8"
6	39h	The ASCII character "9"
7	38h	The ASCII character "8"
8	1	Version number 1
9	1	Frame count of 1
10	181h	CAN ID
14	8	Number of valid CAN bytes
15	18h	CAN byte 1
16	22h	CAN byte 2
17	3Ah	CAN byte 3
18	8Fh	CAN byte 4
19	77h	CAN byte 5
20	12h	CAN byte 6
21	88h	CAN byte 7
22	7Dh	CAN byte 8
23	0	Extended message flag: Standard Message
22	0	Remote transmission flag: No RTR

Table 3: Example CAN message

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