Claims

1. A method for compressing a flow of CAN-bus messages, comprising:

during a training stage:

- determining and assigning an index to at least one function-type pattern within a training flow of messages, each function-type pattern spanning data values that appear in a data field of a sequential series of CAN-bus messages having a same message-ID;
- defining a compressed function-type command for each of said function-type patterns, each function-type command comprising the following parameters: (a) a timestamp of a message in the series; (b) a message-ID of the series; (c) an index of the respective function-type pattern; (d) a parameter for a value indication at a message in the series; (e) period between messages of the series; and (f) number of messages in the series;

during a compression stage:

- dividing a record of the flow of CAN-bus messages into groups, each group relating to messages having a same message-ID;
- within each group, finding one or more series of messages of a same function-type pattern, each series spanning at least 5 messages;
- for each said found series of messages, forming a function-type compressed command in a form as defined in the training stage, said compressed function-type command comprising values for at least two of the parameters as defined for that command during the training stage; and

during a decompression stage:

- using each said function-type compressed command to reconstruct at least a portion of the content of a respective series of messages, wherein said compressed command populates respective values within a respective field or a portion thereof of each individual of said reconstructed messages.

2. The method of claim 1, wherein the function-type pattern appears within a data field of the message or within a portion thereof.

3. The method of claim 2, wherein the function is a counter or a data-field CRC causing respectively a function-type pattern of values to appear within data fields or portion thereof of consecutive messages of a same message ID, and wherein the decompression stage populates said values within respective fields of the reconstructed series of messages.

4. The method of claim 1, wherein the function-type pattern is a constant value appearing within a data field of a message or within a portion thereof, and wherein the decompression stage populates said constant value within respective fields of the reconstructed series of messages.

5. The method of claim 4, wherein the training stage further comprising:

- a step of determining a plurality of constant values that statistically repeat many times in data fields of messages or portions thereof;
- a step of sequentially indexing constants that most commonly appear; and
- wherein each constant-type command during the compression stage contains an index of the constant rather than the constant itself.

6. The method of claim 1, further comprising:
   - a step of indexing all the IDs in the training flow of the CAN-bus messages in sequential order; and
   - during the compression stage inclusion within each compressed command the index of the ID, rather than a true message-ID as originally appears on the CAN-bus.

7. The method of claim 1, further comprising an inclusion within the function-type compressed command of one or more delay indications relative to an expected timestamp based on a known period between commands in that respective series.

8. The method of claim 1, further comprising one or more compressed commands for introducing one or more specific values within data fields of individual reconstructed messages.

9. The method of claim 1, wherein several compressed commands reconstruct a single CAN-bus message.

10. The method of claim 1, wherein a different compressed command is assigned for each function-type pattern, rather than indicating the index of the pattern as a parameter value within the compressed command.

11. The method of claim 1, wherein the decompression of the compressed commands uses metadata that is conveyed from the compression location to the decompression location within a header.

12. The method of claim 10, wherein the header’s metadata contains one or more of: (a) indexing information of the

message-IDs, (b) indexing information of constants, and (c) details about specific functions behavior thereby to enable a decompression side to appropriately convert the command to values within fields of different reconstructed messages.

13. The method of claim 1, wherein said definition of the compressed function-type command further comprising the parameter of (g) an indication of a field or a portion thereof within the messages where the function-type pattern appears.