



Electronic Control Module Traceability and Verification Data Requirements

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. This specification establishes the requirements for data that shall be stored in the memory of an electronic control module to support traceability and verification. This data shall pertain to the electronic control module. In addition, the electronic control module may store traceability and verification data for an assembly that the module is contained within or for external components which interface with the module.

Verification and trace data are utilized to ensure correct vehicle build and to provide the ability to track an electronic control module, assembly, or external component to a specific vehicle identification number.

Beginning in 2014, all newly sourced Global A and subsequent architecture electronic control modules, which are able to transmit and receive serial data information on a serial data bus (e.g., GM Local Area Network (GMLAN)) that is connected to a data link connector shall implement the GMW15862 traceability format in place of the GM1737 (legacy) traceability format.

1.1.1 Electronic Control Modules. The requirements defined herein apply to electronic control modules which are able to transmit and receive serial data information on a serial data bus (e.g., GMLAN) that is connected to a data link connector. All electronic control modules meeting the preceding criteria, installed in vehicles at all GM assembly plants, shall comply with the requirements defined. These requirements may also apply to other electronic control modules as deemed appropriate by the responsible organization.

1.1.2 Assembly Containing an Electronic Control Module. An electronic control module which is delivered to an assembly plant as Part of an Assembly (POA) is referred to as a POA electronic control module. A POA electronic control module which meets the criteria stated in 1.1.1 shall comply with the requirements stated herein. In addition, it may also store traceability and verification data for the assembly. An assembly's traceability and verification data stored in the POA electronic control module shall meet the requirements stated in this document and shall be stored by the assembly supplier.

1.1.3 Components External to an Electronic Control Module. An electronic control module may interface to external components which may not communicate on a serial bus (e.g., GMLAN) that is connected to a data link connector. If the electronic control module has access to the external component's traceability and verification data, it may store this data in addition to its own traceability and verification data. An external component's traceability and verification data stored in the electronic control module shall meet the requirements stated in this document.

The methodology used by the electronic control module to receive and store this data shall be specified in the electronic control module component technical specification.

1.2 Applicability. The requirements specified in this document are intended to ensure consistent storage and access of traceability and verification data for electronic control modules, assemblies, and external components.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3059

GMW3110

GMW15862

2.3 Additional References.

- Dun & Bradstreet at www.dnb.com
- GB6001
- GM1737
- Key Characteristics Designation System (KCDS)
- Labels and Literature website: <https://gmweb.gm.com/sites/toolkit/48Inl/Pages/Home-Page.aspx>
- Vehicle Partitioning and Product Structure (VPPS) managed compressed code; available from <https://vpps.gm.com/vppsapp/mainMenu.do>

3 Requirements

3.1 Data List. Tables A1 through A17 in Appendix A detail the data records that are required for traceability and verification. This data hereafter shall be referred to as the trace/verification data. Electronic control modules that store trace/verification data for an assembly and/or external components shall store the data in separate records (i.e., there shall be one record for the module, one for the assembly and one for each external component). The trace/verification data shall be retained when all electrical power is removed from the electronic control module. The minimum retention period of this data shall be equivalent to the specified life of the electronic control module.

3.2 Data Descriptions.

3.2.1 GMW15862 Traceability Number.

The GMW15862 Traceability Number uniquely identifies an electronic control module. The GM defined traceability code structure is a sixteen (16) character data field as shown in Figure A1.

The supplier shall store this information in the electronic control module in a 16-byte ASCII format. All 16-bytes are required. The new traceability number shall be phased in. See Appendix A for implementation details.

3.2.2 Data Universal Numbering System (DUNS) Number.

A DUNS number is a unique nine (9) digit sequence recognized as the universal standard for identifying and keeping track of businesses worldwide. This number identifies the supplier of a component. The DUNS number shall be stored in a separate 9-byte, fixed length data record. See Appendix A, Table A4 for implementation details.

3.2.3 Compressed VPPS Number.

A Vehicle Partitioning and Product Structure (VPPS) number is a unique value that describes vehicle content (see Appendix C). The VPPS number takes the place of the component identifier number and is needed for data storage in the vehicle assembly plant. The compressed VPPS number, up to 14 ASCII characters shall be stored in a separate fourteen (14) character fixed length data record. See Appendix A, Table A3 for implementation details.

3.2.3.1 Duplicate VPPS Numbers.

It is possible that a component could get used in more than one (1) location on the same vehicle or there may be other reasons that result in a duplicate VPPS between two (2) or more components. In this case, the VPPS will not be unique among these components. If two (2) or more components share the same VPPS number then the least significant character of the VPPS number field shall be set to a value as defined in Table C2 of GMW15862.

Example 1:

Compressed VPPS (Body Control Module): 836.01

Hexadecimal representation:

\$38 \$33 \$36 \$30 \$31 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$58

Alphanumeric representation:

8360100000000X

Example 2:

Compressed VPPS (Front and Rear Seat Modules): 836.03.02

Front:

Hexadecimal representation:

\$38 \$33 \$36 \$30 \$33 \$30 \$32 \$30 \$30 \$30 \$30 \$30 \$30 \$59

Alphanumeric representation:

8360302000000Y

Rear:

Hexadecimal representation:

\$38 \$33 \$36 \$30 \$33 \$30 \$32 \$30 \$30 \$30 \$30 \$30 \$30 \$5A

Alphanumeric representation:

8360302000000Z

3.2.4 End Model Part Number.

The End Model Part Number is the GM part number that is assigned to the electronic control module. This number represents the “as received” control module, (hardware, non-reprogrammable software, reprogrammable software, and calibrations present). The End Model Part Number shall be programmed into the electronic control module by the supplier. If the module is programmed in the vehicle assembly plant or in service, this number may be updated. The entire end model part number (excluding design level suffix) shall be represented in a four-byte hexadecimal format.

Examples:

Part number: 16324523

Hexadecimal representation: \$00 \$F9 \$17 \$AB

Part number: 54321

Hexadecimal representation: \$00 \$00 \$D4 \$31

3.2.5 Base Model Part Number.

The Base Model Part Number is the GM part number that identifies the electronic control module hardware and non-reprogrammable software including boot software (where applicable). The supplier shall store this information in all electronic control modules that are capable of being programmed via serial data (e.g., GMLAN). This part number may be utilized for service reprogramming purposes. This part number shall have read-only access after it is programmed by the supplier. The entire base model part number (excluding design level suffix) shall be represented in a four-byte hexadecimal format.

3.2.6 Software Module Part Number(s).

The Software Module Part Number(s) is (are) used to identify the software or calibration data file(s) programmed into the electronic control module. This information shall be stored in all electronic control modules that are capable of being programmed via serial data (e.g., GMLAN). The electronic control module supplier (or POA manufacturing facility if programming is done at this location) shall store the appropriate software module part number data into the electronic control module as part of the electronic control module programming process. The Software Module Part Number(s) shall be updated if software or calibration data is programmed at the vehicle assembly plant or during service.

3.2.6.1 Data Format.

This section describes the data format required for all modules installed in GM vehicles at all global assembly plants. The Software Module Part Number is a GM part number. The entire software module part number (excluding design level suffix) shall be represented in a four-byte hexadecimal format.

3.3 Serial Data.

The definitions of the data identifiers and the procedures for reading and writing of the trace data for an electronic control module located on a network accessible by a test tool are specified in Appendix A of this document. Also, the trace and verification data for such modules are specified in GMW3110 for Global A and in GB6001 for Global B. Standard Data Identifiers (DID) have been reserved for trace/verification data for an electronic control module. Additional DIDs shall be assigned if the electronic control module also stores trace/verification data for an assembly or external component(s). These additional DIDs shall be assigned to application specific DIDs. Specifications GMW3110 and GB6001 specify which DIDs are application specific for Global A and Global B respectively. It is recommended that the entire collection of trace/verification data (trace, DUNS, VPPS) for an assembly or external component(s) be assigned to a single DID for each assembly or component to conserve DID numbers.

4 Validation

4.1 General. Not applicable.

4.2 Validation Cross Reference Index. Not applicable.

4.3 Supporting Paragraphs. Not applicable.

5 Provisions for Shipping

Not applicable.

6 Notes

6.1 Glossary. Not applicable.

6.2 Acronyms, Abbreviations, and Symbols.

#	Number
ASCII	American Standard Code for Information Interchange
BC	Broadcast Code
BMPN	BaseModelPartNumber
CVPPS	Compressed Vehicle Partitioning and Product Structure
DID	Data Identifier
DUNS	Data Universal Numbering System
ECU	Electronic Control Unit
GMLAN	GM Local Area Network
GPDS	Global Product Description System
GPS	Global Propulsion Systems
GSSLT	Global Subsystem Leadership Team
KCDS	Key Characteristics Designation System
MTC	Manufacturing Traceability Characters
PN	Part Number
POA	Part of an Assembly
SPS	Service Programming System
SWMI	Software Module Identifier
VPPS	Vehicle Partitioning and Product Structure

7 Additional Paragraphs

7.1 All parts or systems supplied to this standard must comply with the requirements of GMW3059, **Restricted and Reportable Substances**.

8 Coding System

This standard shall be referenced in other documents, drawings, etc., as follows:

GMW4710

9 Release and Revisions

This standard was originated in June 2000. It was first approved by Global Advanced Architecture and Global Electrical Technology Engineering in March 2009. It was first published in March 2009.

Issue	Publication Date	Description (Organization)
1	MAR 2009	Initial publication.
2	DEC 2010	Content revision and additional information. (Global Advanced Architecture)
3	APR 2011	Revise VPPS number length to 14 characters from 15. (Global Advanced Architecture)
4	MAR 2018	Revised to current template. Added References to Global B Specification GB6001 for Global B Trace and Part Number DIDs definitions and DID numbers. Updated Tables for showing DID Numbers in Global A and Global B. Removed obsolete information from and references to legacy document GM1737. (Electrical Architecture Global Subsystem Leadership Team (GSSLT))
5	AUG 2018	Updated Table A1 and revised Appendix information. (Electrical Architecture Global Subsystem Leadership Team (GSSLT))

Appendix A: Data Types and DID Definitions

Figure A1: GMW15862 Traceability Number

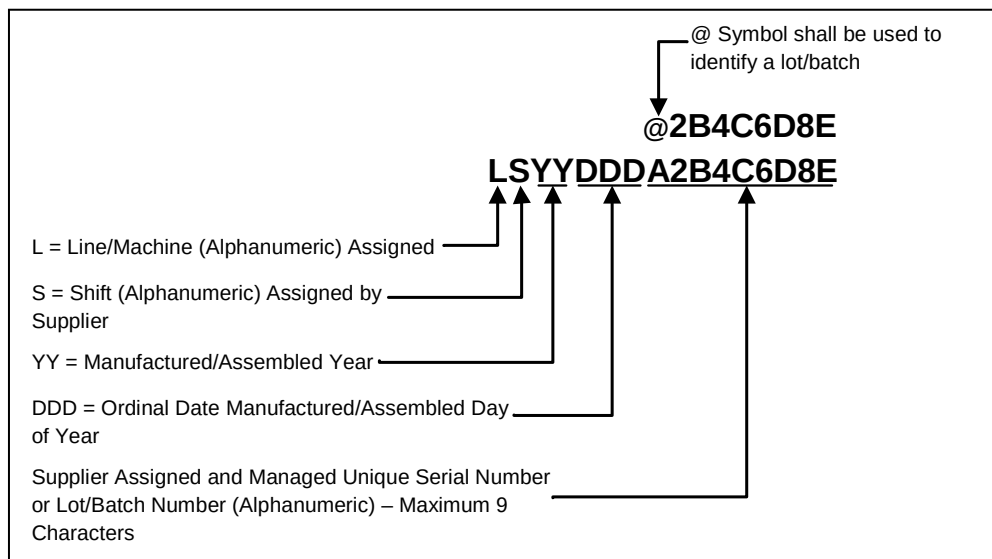


Table A1: GMW15862 Traceability Data Types

Name	Data		Notes
	Number of Bytes	Type	
Line	1	ASCII	
Shift ID	1	ASCII	
Year	2	ASCII	
Day of Year (Julian Date) ^{Note 1}	3	ASCII	
Serial, Lot or Batch Number	9	ASCII	
DUNS (Data-Universal-Numbering-System) ^{Note 2}	9	ASCII	
Compressed VPPS ^{Note 3}	14 ^{Note 4}	ASCII	

Note 1: See Appendix B.

Note 2: See Table A4

Note 3: See Table A3

Note 4: 13 bytes of data are used for the compressed VPPS and 1 byte is used for duplicate VPPS numbers