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# DEPARTMENT OF DEFENSE
# INTERFACE STANDARD

# CHARACTERISTICS OF 28 VOLT DC INPUT POWER TO UTILIZATION EQUIPMENT IN MILITARY VEHICLES

AMSC N/A FSC 2920

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

# FOREWORD

1 This standard is approved for use by all departments and agencies of the Department of Defense (DOD).

2 The intent of this document is to describe the nominal 28 VDC voltage characteristics, common across military ground vehicles, at the input power terminal of the utilizing electrical and electronic assemblies directly connected to the distribution network. This lays the groundwork for commonality across vehicle platforms. The vehicle's design authority is responsible to ensure that the 28 VDC delivered to the input power terminal of the utilization equipment meets these requirements.

3 This is neither a power source nor a power system standard. This standard focuses on utilization equipment, the conditions under which it is expected to operate, and its permitted emissions.

4 Comments, suggestions, or questions on this document should be addressed to U.S. Army DEVCOM Ground Vehicle Systems Center, ATTN: Standardization, FCDD-GVS-SAT, MS #268, 6501 E. 11 Mile Road, Warren, MI 48397-5000 or to usarmy.detroit.devcom-gvsc.mbx.standardization@army.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.dla.mil.

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# 1. SCOPE

1.1 Scope. This standard defines the operating voltage limits and transient voltage characteristics of the 28 VDC electrical power at the input power terminals to the utilization equipment connected to the electrical power distribution system on military ground vehicle platforms.

# 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, the document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this standard, whether or not they are listed.

2.2 Government Documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE STANDARDS

| | | |
|---|---|---|
| MIL-STD-461 | - | Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment |

(Copies of this document are available online at https://quicksearch.dla.mil/.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of documents are those cited in the solicitation or contract.

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

| | | |
|---|---|---|
| ISO 7637-2 | - | Road Vehicles - Electrical Disturbances from Conduction and Coupling - Part 2: Electrical Transient Conduction Along Supply Lines Only-Third Edition |

(Copies of this document are available online at www.iso.org.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

# 3. DEFINITIONS

3.1 Utilization equipment. Utilization equipment is defined as the electronic device, equipment, or system subjected to the voltage range(s) indicated in this specification.

3.2 Equipment under test. The Equipment Under Test (EUT) is defined as the electronic device, equipment, or system undergoing validation or verification testing/evaluation.

3.3 Operations.

3.3.1 Starting event. Electrical power during an engine starting event is sufficient for utilization equipment to provide the level of performance specified in the utilization equipment's detailed specification.

3.3.2 Normal operation. Electrical power is sufficient for utilization equipment to provide the level of performance specified in the utilization equipment's detailed specification.

3.4 Operational voltage range. Voltage characteristics representative of the nominal operating voltage within a pre-defined tolerance or limit. Some variation in voltage is reasonable and expected; however, this variation remains within pre-defined limits of operation.

3.5 Steady state voltage. Mean voltage, including ripple, measured over a minimum period of one second.

3.6 Transient waveform characteristics. A transient waveform represents a time-varying electrical signal defined by characteristics such as rise/fall time, period, frequency of oscillation, pulse width. Transients typically exceed pre-defined steady-state limits, return to and remain within the steady-state limits within a specified time. The transient may have positive or negative polarity and could be of short or long duration. Transient voltage levels may also exceed the system battery voltage by several hundred volts depending on the source of the transient.

3.6.1 Rise time. The rise time is the difference between when the rising edge of a voltage or current transient crosses a pre-defined low threshold to when the transient crosses a pre-defined high threshold. As defined in this standard, the low threshold is defined to be the time at when the amplitude of the rising edge is equal to ten percent (10%) of the maximum value of the transient. The high threshold is defined to be the time when the amplitude is equal to ninety percent (90%) of the maximum value of the transient.

3.6.2 Fall time. The fall time is the difference between when the falling edge of a voltage or current transient crosses a pre-defined high threshold to when the transient crosses a pre-defined low threshold. As defined in this standard, the high threshold is defined to be the time at when the amplitude of the falling edge is equal to ninety percent (90%) of the maximum value of the transient. The low threshold is defined to be the time when the amplitude is equal to ten percent (10%) of the maximum value of the transient.

3.6.3 Recovery time. The interval between the time a characteristic deviates from the steady-state limits and the time it returns and remains within the same range (see Figure 1).

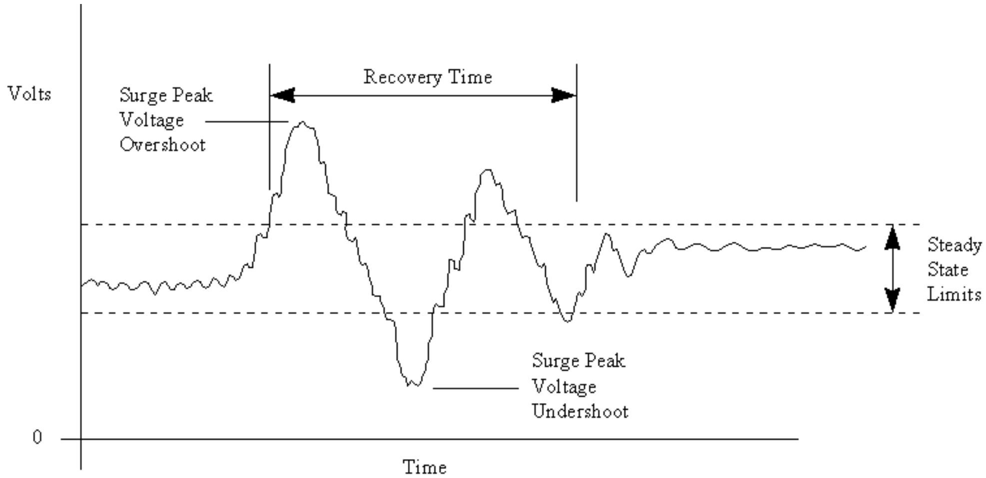


FIGURE 1. Recovery time.

3.6.4 Ripple. The regular and irregular low frequency variations of voltage about a fixed DC voltage level during normal operation of a DC system.

3.7 Types of transient waveforms. There are several different types of transient waveforms associated with the vehicle's power supply system.

3.7.1 Starting disturbance. A starting disturbance is the variation in system voltage from the normal operating voltage range caused by the initial engagement of the engine starter and subsequent engine cranking. The duration of the Initial Engagement Surge (IES) is measured from the time at which it departs from the normal operating voltage to the time at which it reaches and remains at the cranking voltage. An example showing "Initial Engagement Surge" and "Cranking", the voltage level during active engine cranking, is shown in Figure 2.

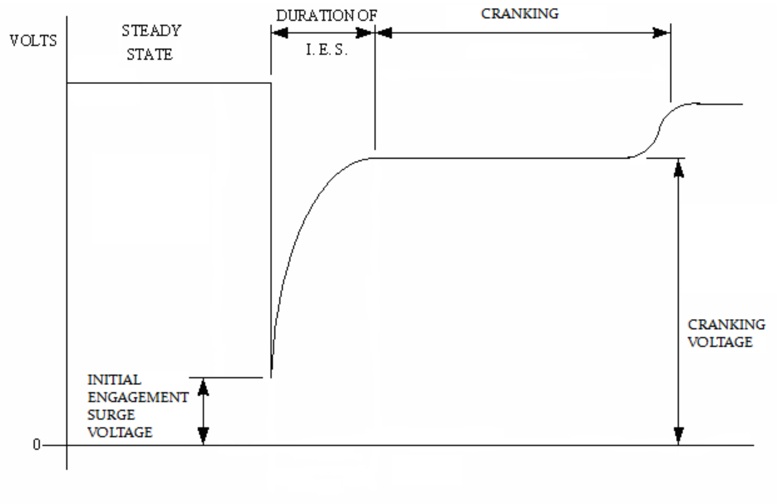


FIGURE 2. Sample starting disturbance waveform.

3.7.2 Voltage spike. A voltage spike is an energy-limited transient waveform having a duration less than or equal to 1 millisecond (ms). These typically result from the interaction of the power delivery system wiring and switching of reactive loads or a mismatch in impedance between the wiring harness and equipment. Figure 3 shows an example of a spike waveform.

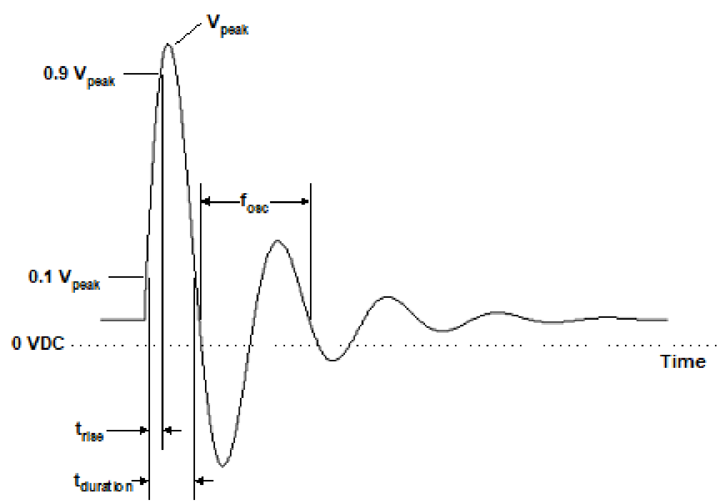


FIGURE 3. Sample voltage spike waveform.

3.7.3 Voltage surge. A surge is a transient waveform having a duration greater than 1 ms and a specific wave shape, typically a rising/falling edge and a slow exponential decay for the falling edge. Surges result from the switching of reactive loads containing a significant level of stored energy or sudden disconnection of a constant load. Surges may also occur due to the application of high-demand loads.

3.7.3.1 Positive voltage surge. A positive voltage surge is a positive-going transient, which exceeds the nominal supplied voltage. This may occur when a high current or inductive load is suddenly disconnected. The most common occurrence of a positive voltage surge is an "alternator load dump," which occurs when the alternator is working to charge a partially or fully discharged set of batteries and the connection to the battery positive terminal is suddenly disconnected. The alternator cannot immediately decrease its output to compensate for the sudden loss of load so the energy delivered during this settling period is distributed to the vehicle's electrical system. A positive surge ($V_{PEAK}$) with a short rise time ($t_{RISE}$) and long exponential decay is generated above the nominal battery voltage of the system ($V_{NOM}$) and last for a given duration ($t_{DURATION}$). Figure 4 shows an example of an alternator load dump waveform.

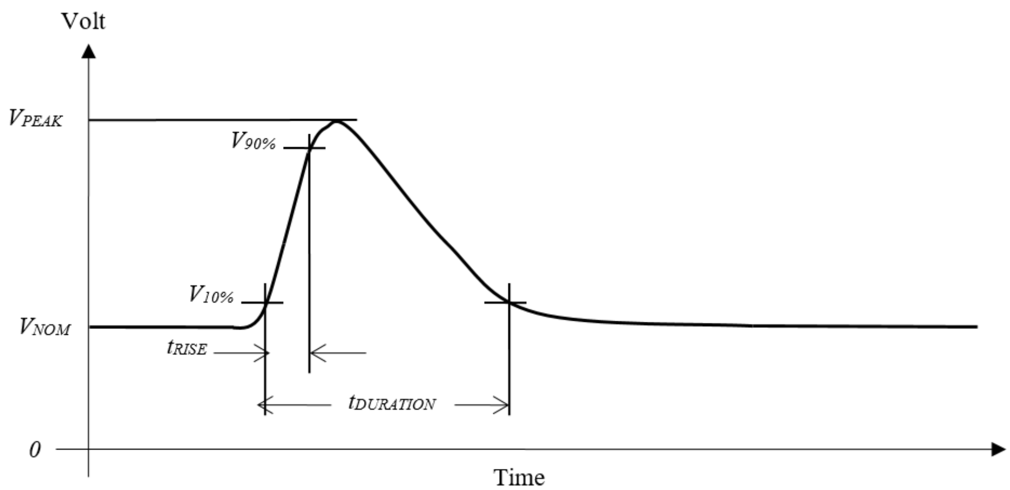


FIGURE 4. Sample alternator load dump waveform.

3.7.3.2 Negative voltage surge. A negative voltage surge, commonly called a voltage dip, is a negative-going transient that drops below the nominal supplied voltage. This may occur when a sudden load is placed on a voltage source, such as an alternator. Voltage sources cannot immediately change their output, so the system voltage decreases until the voltage source can compensate for the sudden increase in load.

3.7.4 Intermittent contact. Intermittent contact occurs when electrical contacts in a switch or relay change state. A common way of describing intermittent contacts is the use of the terms "contact bounce" or "chattering relay." Mechanical vibration may also affect the operation of mechanical contacts and cause this to occur. The settling period and pulse widths associated may vary depending on the construction of the contacts. Figure 5 shows an example of an intermittent contact waveform. Intermittent contact may affect operation of equipment in one of two ways. First, equipment power feed(s) controlled by the relay/switch may be directly affected with resets or dropouts. Second, the electrical noise generated by the intermittent contact on a directly connected wire may be coupled to nearby wires in the wiring harness through electric/magnetic field coupling.

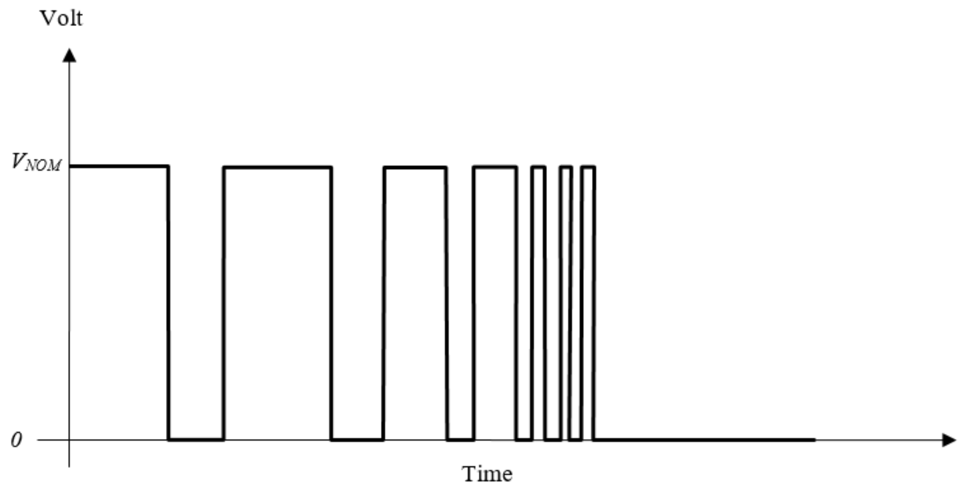


FIGURE 5. Sample intermittent contact waveform.

3.8 Reverse polarity. Reverse polarity is defined as the inverted connection of the EUT's power terminal(s) to the vehicle's power system. The positive (+) terminal of the EUT is connected to the negative (-) or "ground" terminal of the vehicle's power supply system. The negative (-) terminal of the EUT is connected to the positive (+) terminal of the vehicle's power supply system.

# 4. GENERAL REQUIREMENTS

4.1 Reverse polarity. Utilization equipment shall protect itself against damage due to input power with reverse polarity. With reverse polarity voltage applied to the input power terminals of the utilization equipment, the magnitude of the reverse polarity input current shall be equal to or less than the magnitude of the utilization equipment normal operating current.

4.2 Electromagnetic compatibility. Utilization equipment shall be compatible with the applicable performance specification requirements for control of electromagnetic interference and voltage spikes induced by lightning, electromagnetic pulses, and power switching. Electromagnetic interference is not covered by this standard.

4.3 Electrostatic discharge. Utilization equipment shall be compatible with the applicable performance specification requirements for immunity to electrostatic discharge. Electrostatic discharge is not covered by this standard.

# 5. DETAILED REQUIREMENTS

5.1 Voltage compatibility requirements. This section contains detailed requirements regarding the voltage conditions under which the utilization equipment is expected to operate. Verification of compliance shall be in accordance with sections 5.2 and 5.3 of this document.

5.1.1 Steady state operation. This section describes the steady state voltage range, which excludes engine starting disturbances, and applies to all utilization equipment. Utilization equipment shall operate without degradation or damage when subjected to the operational voltage range specified in this section.

5.1.1.1 Operational voltage range. The lower limit of the operational voltage range for utilization equipment is the lower limit shown in Figure 8, including ripple. The upper limit of the operational voltage range for utilization equipment is 33 VDC, including ripple.

5.1.1.2 Voltage ripple.

5.1.1.2.1 Injected voltage ripple. Utilization equipment shall operate without degradation or damage when subjected to ripple voltage up to 2V above and below the steady state voltage (4V peak-to-peak). The frequency components of injected ripple are within the range of 30 Hertz (Hz) to 5 kilohertz (kHz). Injected voltage at frequencies above this range are not considered ripple for the purposes of this standard.

5.1.1.2.2 Emitted voltage ripple. Emitted ripple voltage from the EUT shall be less than 1V above and below the steady state voltage (2V peak-to-peak). The frequency components of emitted ripple are within the range of 30Hz to 1kHz. Emitted voltage at frequencies above this range are not considered ripple for the purposes of this standard.

5.1.2 Starting event. This section applies to utilization equipment operating while subjected to engine starting disturbances. Utilization equipment shall operate without degradation or damage when subjected to engine starting disturbances within the limits shown in Figure 6. Consecutive starting events are a minimum of 1 second apart.

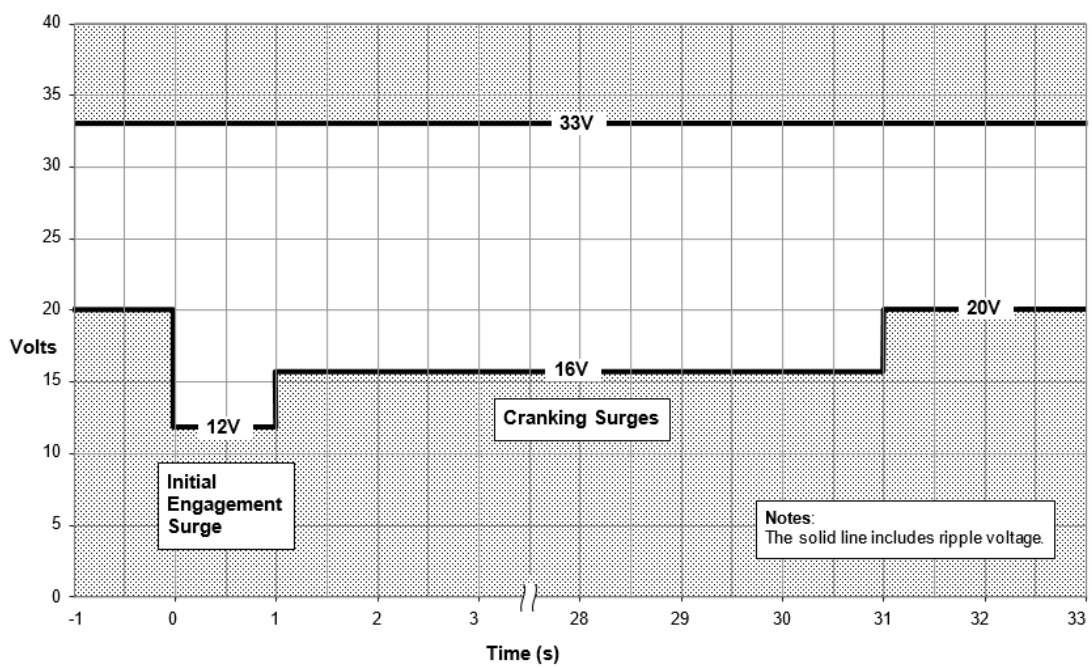


FIGURE 6. Starting disturbance limits on 28VDC systems.

5.1.2.1 Initial Engagement Surge (IES). The minimum voltage supplied to utilization equipment during an IES is 12 VDC. The maximum duration of the IES is 1 second.

5.1.2.2 Cranking surges. The minimum voltage supplied to utilization equipment during cranking surges is 16 VDC. The maximum duration of cranking surges is 30 seconds.

5.1.3 Transient disturbances. This section describes transient waveforms and applies to all utilization equipment.

5.1.3.1 Voltage spikes.

5.1.3.1.1 Injected voltage spikes. Utilization equipment shall operate without degradation or damage when subjected to voltage spikes within the envelope shown in Figure 7. The maximum rise time ($t_{RISE}$) of the injected spikes is 50 nanoseconds, and the maximum total energy content of a single spike is 200 millijoules (mJ).

5.1.3.1.2 Emitted voltage spikes. Emitted voltage spikes from utilization equipment shall be within the limits shown in Figure 7. The maximum total energy content of a single emitted spike is 125 millijoules (mJ).

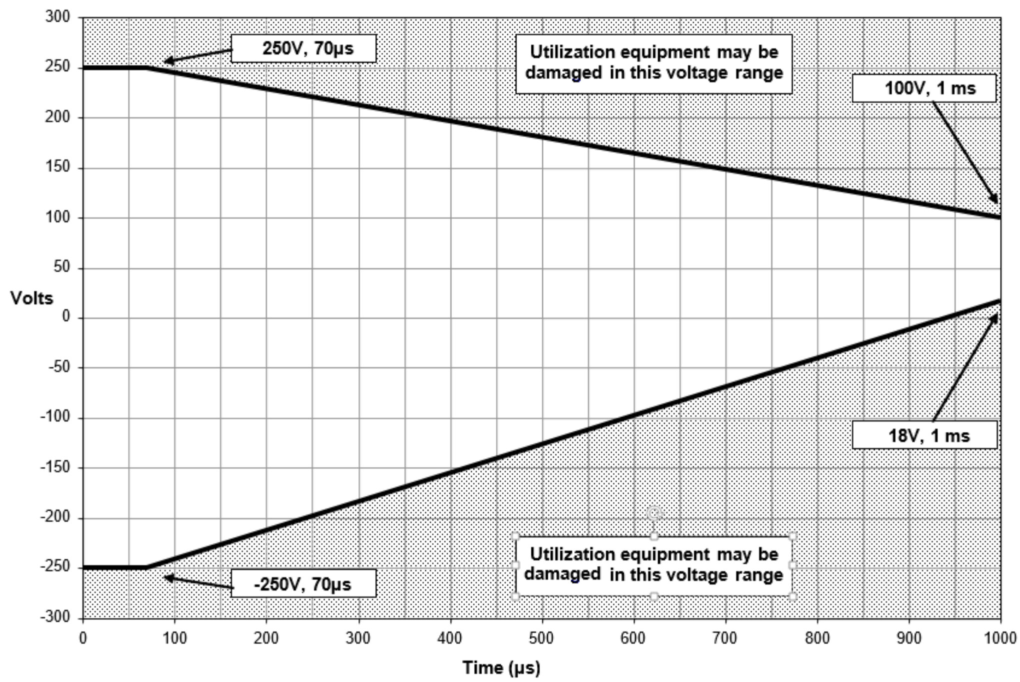


FIGURE 7. Envelope of spikes for 28VDC systems.

5.1.3.2 Voltage surges.

5.1.3.2.1 Injected voltage surges. Utilization equipment shall operate without degradation or damage when subjected to voltage surges within the limits shown in Figure 8.

5.1.3.2.2 Emitted voltage surges. Emitted voltage surges from utilization equipment shall be within the limits shown in Figure 8.

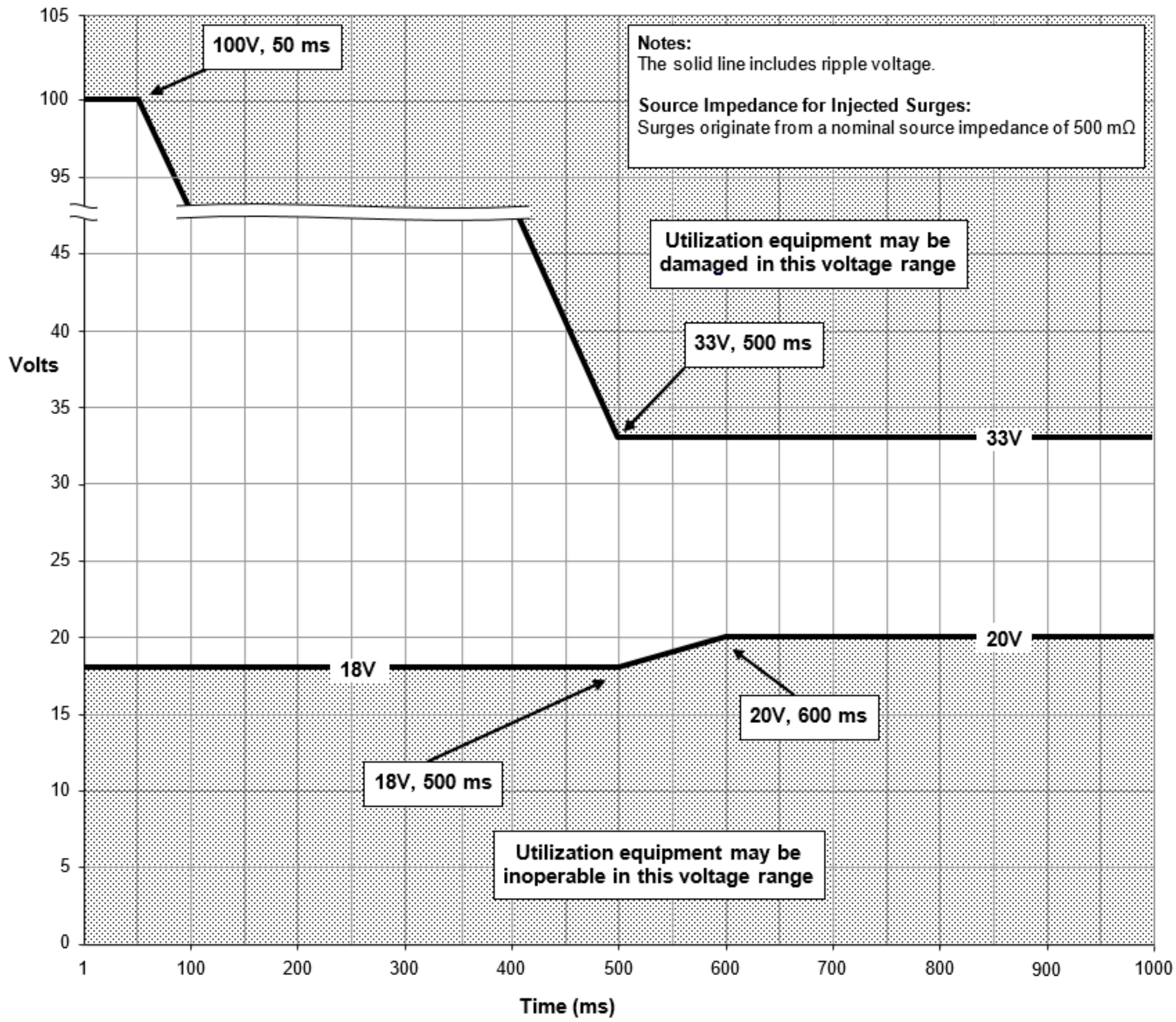


FIGURE 8. Limits of operational voltage and surges for 28VDC systems.

5.2 Voltage compatibility verification setup.

5.2.1 Environmental conditions. Testing of the EUT according to this standard shall be performed under the following environmental conditions:

| | |
|---|---|
| Temperature: | +23°C ± 5°C (+73°F ± 9°F) |
| Relative Humidity: | 0% to 90% humidity |
| Atmospheric Pressure: | 80kPa to 102kPa (23.62 inHg to 30.12 inHg) |

5.2.2 Calibration of test equipment. Test equipment used to verify parameters such as current, voltage, and rise/fall time of the test setup shall have traceable calibration to a national standards body, such as the National Institute of Standards and Technology (NIST), and within the calibration period at the time of the test.

5.2.3 Nominal voltage. For purposes of verification, the term "nominal" when used to describe voltage shall mean the stated voltage ±1%, unless otherwise stated.

5.2.4 Measurement tolerance. The default measurement tolerance shall be ±5% unless otherwise stated.

5.2.5 Measurement reference point. The measurement reference point for EUTs shall be the power input terminals of the EUT. EUTs having multiple power input terminals shall have all input terminals individually and simultaneously monitored during the test(s). All injected transient voltage waveforms shall be verified open circuit (EUT and loads disconnected) prior to test.

5.2.6 Power return. The test setup shall use a power return for the EUT as required by the applicable performance specification. If a power return is not specified, the EUT power return conductor shall be equivalent to the EUT power source conductor. In cases where the EUT uses the vehicle structure as the power return, a ground plane in accordance with (IAW) MIL-STD-461 shall be used to simulate the vehicle's metal structure as the return current path. The negative (-) terminal of the EUT as well as the negative (-) terminal of the power source shall be bonded to the ground plane.

5.2.7 Loads. Loads representative of the actual installation on vehicle shall be used to test the EUT if the EUT is not a standalone device.

5.2.8 Power supply. Power supplies shall maintain ±1% of specified voltage during testing, as measured at their output.

5.3 Voltage compatibility verification method.

5.3.1 Steady state operation.

5.3.1.1 Operational voltage range. The EUT shall be tested to operate as specified while subjected to the voltages/durations specified in section 5.1.1.1. Any deviation from normal operation shall be recognized as a failure of the EUT.

5.3.1.2 Voltage ripple.

5.3.1.2.1 Injected voltage ripple. The limits for voltage ripple specified in section 5.1.1.2.1 shall be applied in accordance with the test method specified in MIL-STD-461 CS101 at nominal voltages of 22 VDC and 31 VDC. Verify the EUT operates as specified while subjected to the ripple. Any deviation from normal operation shall be recognized as a failure of the EUT.

5.3.1.2.2 Emitted voltage ripple. The EUT shall be supplied power by a power supply, as specified in section 5.2.8, operating at nominal voltages of 22 VDC and 31 VDC through a simulated source impedance resistor and a Line Impedance Stabilization Network (LISN). Source voltage shall be regulated at the input of the LISN(s). An acceptable test circuit is shown in Figure 9.

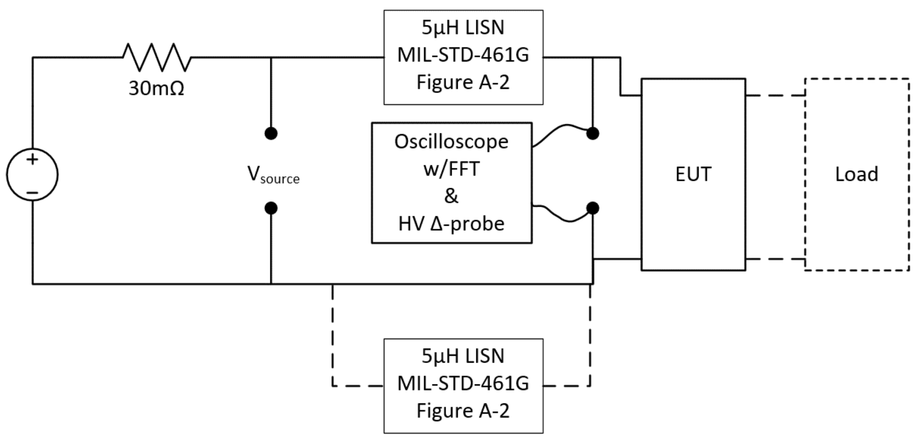


FIGURE 9. Sample test circuit for emitted voltage ripple.

One LISN shall be used when the power return is the vehicle chassis; in this case the ground plane provides the power return current path. Two LISNs shall be used when the EUT has a dedicated power return conductor, such as wires, buss bars. This simulates the additional vehicle wiring harness present in the vehicle.

The test operator shall exercise function(s) of the EUT capable of producing ripple, including minimum and maximum load conditions. Each load condition shall be exercised for a minimum of 10 seconds in order to give a reasonable probability that the maximum ripple voltage is recorded.

The test operator shall monitor the operation of the EUT. Oscilloscope Fast Fourier Transform (FFT) measurement of voltage ripple emitted by the EUT shall be within the limits described in section 5.1.1.2.2. Alternatively, a spectrum analyzer may be used in place of an oscilloscope with the appropriate correction factors applied, as specified in MIL-STD-461G A.5.5.

5.3.2 Starting event. When applicable, the EUT shall be tested to operate as specified while subjected to the voltages/durations as specified by TABLE I. Any deviation from normal operation shall be recognized as a failure of the EUT.

TABLE I. Starting event test parameters.

| Event | Operating voltage ($V_{nom}$) | Operating duration (s) | IES (V) | IES duration (s) | Cranking voltage (V) | Cranking duration (s) |
|---|---|---|---|---|---|---|
| 1 | 20 -1/+0 | 1 -0/+0.1 | N/A | N/A | N/A | N/A |
| 2 | N/A | N/A | 12 -1/+0 | 1 -0/+0.1 | N/A | N/A |
| 3 | 20 -1/+0 | 1 -0/+0.1 | N/A | N/A | N/A | N/A |
| 4 | N/A | N/A | 12 -1/+0 | 1 -0/+0.1 | N/A | N/A |
| 5 | 20 -1/+0 | 1 -0/+0.1 | N/A | N/A | N/A | N/A |
| 6 | N/A | N/A | 12 -1/+0 | 1 -0/+0.1 | 16 -1/+0 | 30 -0.1/+0 |

5.3.3 Transient disturbances.

5.3.3.1 Voltage spikes.

5.3.3.1.1 Injected voltage spikes. The EUT shall be supplied power by a power supply, as specified in section 5.2.8, set to the nominal 28 VDC operating voltage through a LISN. An acceptable test circuit is shown in Figure 10 with tolerances as specified by MIL-STD-461G A.4.3.1. The test operator shall verify that the test setup impedances are in accordance with the values in Figure 10.

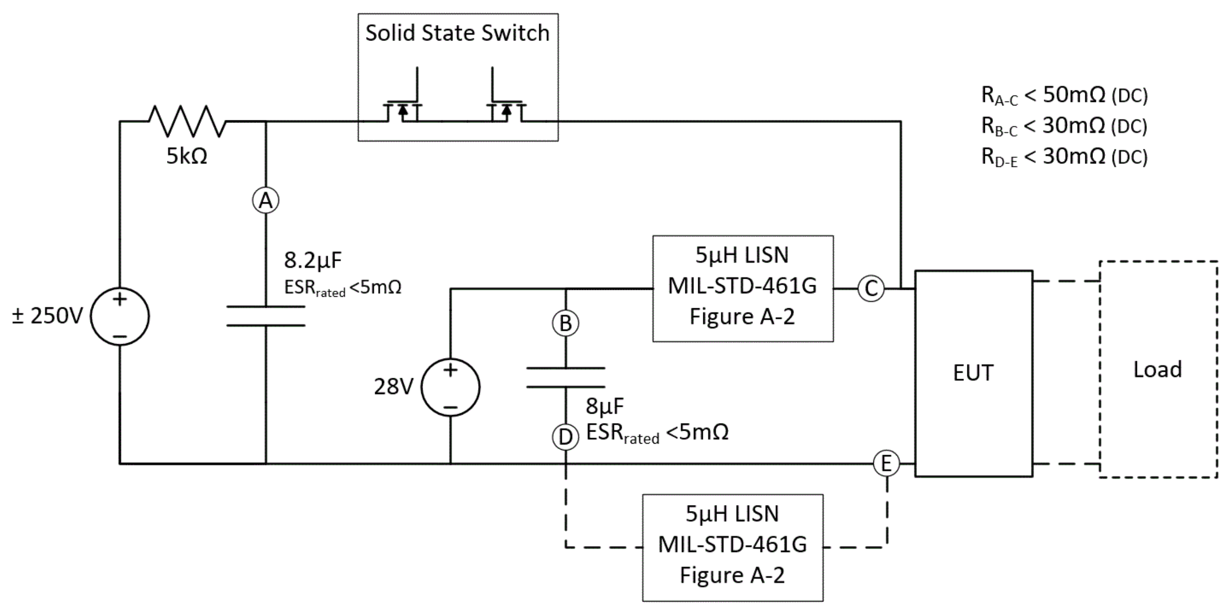


FIGURE 10. Sample test circuit for immunity to injected voltage spikes.

One LISN shall be used when the power return is the vehicle chassis; in this case the ground plane provides the power return current path. Two LISNs shall be used when the EUT has a dedicated power return conductor, such as wires and buss bars. This simulates the additional vehicle wiring harness present in the vehicle.

Both positive and negative voltage spikes shall be applied at the input to the EUT. A minimum of fifty (50) 250V spikes of each polarity shall be applied at 1 second intervals. Each injected voltage spike shall have a peak amplitude of 250V, a rise time not exceeding 50 nanoseconds (ns), and a frequency of oscillation greater than 20 kHz and less than 500 kHz. If the sample test circuit in Figure 10 is used, the resultant injected voltage spike will meet the required spike characteristics. If another test circuit is used, the capacitor sourcing the injected voltage spike shall be 8.2 microfarads (μF) and the impedance of the test circuit shall be in accordance with Figure 10.

Verify the EUT operates as specified while subjected to the voltage spikes during the EUT's "worst case" load conditions. When "worst case" is not easily determined, the EUT shall be tested under all boundary load conditions including, at a minimum, its minimum and maximum load conditions. Any deviation from normal operation shall be recognized as a failure of the EUT.

5.3.3.1.2 Emitted voltage spikes. The EUT shall be supplied power by a source set to the nominal 28 VDC operating voltage. Use the conducted transient emissions test method specified in ISO 7637-2 to measure the spikes emitted by the EUT using a test setup similar to Figure 11.

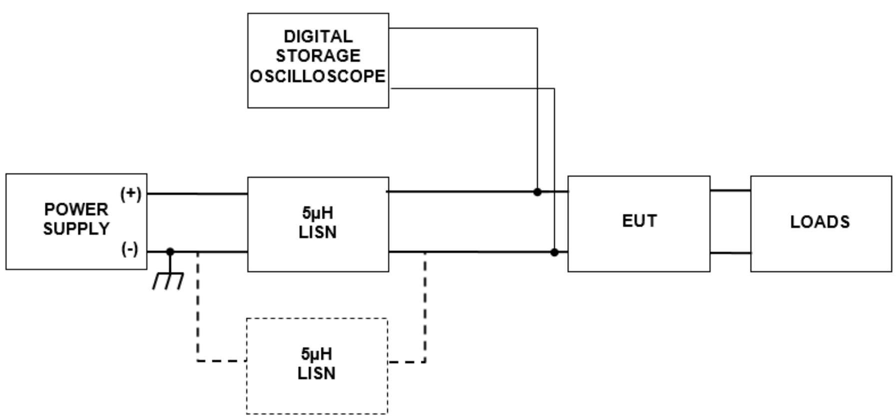


FIGURE 11. Sample test setup for emitted voltage spikes and surges.

One LISN shall be used when the voltage return is the vehicle chassis; in this case the ground plane provides the voltage return current path. Two LISNs shall be used when the EUT has a dedicated voltage return conductor, such as wires and buss bars. This simulates the additional vehicle wiring harness present in the vehicle.

The test operator shall exercise switching function(s) of the EUT capable of producing spikes, for example the switching of any inductive loads controlled by the EUT. If power to the EUT is controlled by means of a vehicle mounted switch or relay, the test setup shall include the switch or relay and vehicle-representative connecting wiring between the test point and the EUT. Each switching function shall be exercised a minimum of thirty-two (32) times at 1 second intervals in order to give a reasonable probability that the maximum spike voltage is recorded.

The test operator shall monitor the operation of the EUT. Voltage spikes emitted by the EUT shall be within the limits shown in Figure 7. Any voltage spike or combination of voltage spikes emitted from a single event shall have an energy content less than 125 (mJ).

5.3.3.2 Voltage surges.

5.3.3.2.1 Injected voltage surges. The test operator shall inject voltage surges into the EUT using a test setup similar to Figure 12, with power supplies as specified in section 5.2.8 and tolerances as specified by MIL-STD-461G A.4.3.1. The test operator shall verify that the test setup impedances are in accordance with the values in Figure 12.

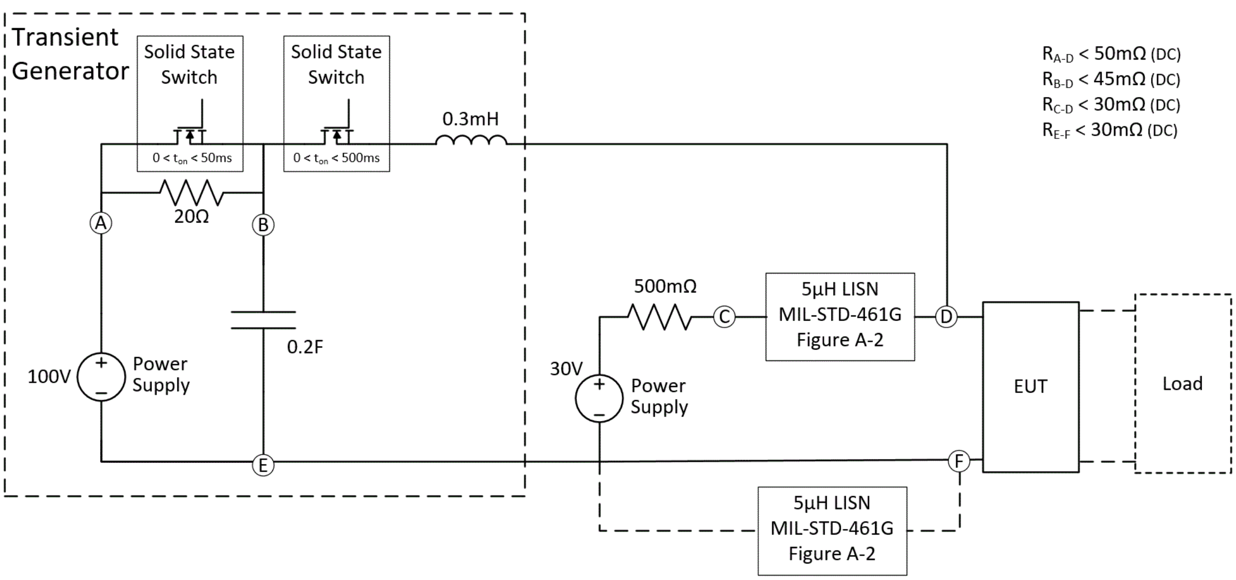


FIGURE 12. Sample test circuit for immunity to injected voltage surges.

The test operator shall verify the amplitude ($V_{NOM}$) of the operating voltage at the input of the EUT at the start of test (t = 0). The test operator shall verify the amplitude ($V_{PEAK}$), measured at the output of the transient generator power supply, is maintained throughout the duration of the test. The test operator shall verify the duration of the rise time, closed duration of solid state switch 1, and closed duration of solid state switch 2 adhere to Table II by observing the voltage surge waveform at the input of the EUT during test.

Verify the EUT operates as specified while subjected to the voltage surges during the EUT's "worst case" load conditions. When "worst case" is not easily determined, the EUT shall be tested under all boundary load conditions including, at a minimum, its minimum and maximum load conditions. Any deviation from normal operation shall be recognized as a failure of the EUT.

TABLE II. Positive voltage surge test parameters.

| Operating voltage ($V_{NOM}$) | Amplitude ($V_{PEAK}$) | Rise time (ms) | Solid State Switch 1 closed duration (ms) | Solid State Switch 2 closed duration (ms) | Source impedance (mΩ) | Number of pulses | Time between pulses (s) |
|---|---|---|---|---|---|---|---|
| 30 -0/+1 | 100 -0/+10 | 1 < t < 10 | 50 -0/+5 | 500 -0/+5 | 500 -25/+0 | 5 | 5 |

5.3.3.2.2 Emitted voltage surges. The EUT shall be supplied power by a source set to the nominal 28 VDC operating voltage. The test operator shall measure voltage surges emitted by the EUT using a test setup similar to Figure 11. The test operator shall exercise function(s) of the EUT capable of producing surges. Each surge-producing function shall be exercised a minimum of thirty-two (32) times in order to give a reasonable probability that the maximum surge voltage is recorded. The test operator shall monitor the operation of the EUT. Voltage surges emitted by the EUT shall be within the limits shown in Figure 8.

5.3.4 Reverse polarity. With appropriate current measurement and protection in place, connect the positive (+) terminal of the EUT to the negative (-) terminal of the power supply system. Connect the negative (-) terminal of the EUT to the positive (+) terminal of the power supply system. Set the voltage on the power supply to 33 VDC and leave connected for five (5) minutes. Measurement of reverse polarity current in excess of normal operating current for the EUT shall be recognized as a failure of the EUT. Connect EUT input terminals to power with the correct polarity and verify device operates as specified. Any deviation from normal operation shall be recognized as a failure of the EUT.

5.3.5 Electromagnetic compatibility . The EUT shall demonstrate compliance with the applicable performance specification requirements for control of electromagnetic interference and voltage spikes induced by lightning, electromagnetic pulses, and power switching prior to MIL-STD-1275 testing. Electromagnetic interference testing is not covered by this standard.

5.3.6 Electrostatic discharge. The EUT shall demonstrate compliance with the applicable performance specification requirements for immunity to electrostatic discharge prior to MIL-STD-1275 testing. Electrostatic discharge testing is not covered by this standard.

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The intent of this document is to describe the nominal 28 VDC voltage characteristics, common across military ground vehicles, at the input power terminal of the utilizing electrical and electronic assemblies directly connected to the distribution network. This lays the groundwork for commonality across vehicle platforms. The vehicle's design authority is responsible to ensure that the 28 VDC delivered to the input power terminal of the utilization equipment meets these requirements.

6.2 Acronyms.

TABLE III. Acronyms.

| Acronym | Definition |
|---|---|
| AMSC | Acquisition Method Suffix Code |
| DoD | Department of Defense |
| EUT | Equipment Under Test |
| FSC | Federal Supply Code |
| IAW | In Accordance With |
| IES | Initial Engagement Surge |
| ISO | International Organization for Standardization |
| LISN | Line Impedance Stabilization Network |
| NATO | North Atlantic Treaty Organization |
| NIST | National Institute of Standards and Technology |
| STANAG | Standardization Agreement |

6.3 International interest. Certain provisions of this standard are the subject of international standardization agreement NATO STANAG 2601. When a change notice, revision, or cancellation of this standard is proposed which will modify the international agreement concerned, the preparing activity will take appropriate action through international standardization channels, including departmental standardization offices, to change the agreement or make other appropriate accommodations.

6.4 Changes from previous issue. The margins of this standard are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the previous issue.

6.5 Subject term (key word) listing.

Polarity
Recovery time
Ripple
Rise time
Spike
Starting disturbance
Surge
Voltage

CONCLUDING MATERIAL

Custodians:
Army – AT

Preparing Activity:
Army - AT

(Project 2920-2019-002)

Review Activities:
Army - CR, MI, TE
DLA - CC

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.dla.mil.