

INCH-POUND
MIL-C-52009D
02 May 2012
SUPERSEDING
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28 April 1975

MILITARY SPECIFICATION
CONTROL-PANEL ASSEMBLY FOR PORTABLE
HELIPORT ELECTRIC LIGHTING

INACTIVE FOR NEW DESIGN
AFTER 28 September 1999

This specification is approved for use by all Departments
and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers a weatherproof control-panel assembly for sully and controlling the voltage for portable heliport lighting installations.

1.2 Part or Identifying Number (PIN). The PIN will consist of the military specification designation as shown here:

MIL-C-52009

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3 and 4 of this specification, 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 (see 6.2).

Comments, suggestions or questions on this document should be addressed to DLA Land and Maritime, ATTN: VAT, Post Office Box 3990, Columbus, OH 43218-3990, or emailed to CircuitProtect@dla.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.daps.dla.mil/>.

DEPARTMENT OF DEFENSE SPECIFICATIONS

[MIL-T-704](#) - Treatment and Painting of Material.

DEPARTMENT OF DEFENSE STANDARDS

[MIL-STD-108](#) - Definitions of and Basic Requirements for Enclosures for Electric and Electronic Equipment.

[MIL-STD-129](#) - Marking for Shipment and Storage.

[MIL-STD-130](#) - Identification Marking of US Military Property.

(Copies of these documents are available online at <https://assist.daps.dla.mil/quicksearch/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications 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.

US ARMY COMMUNICATIONS-ELECTRONICS COMMAND

[TA13217E7550](#) - Control Panel Assembly

(Copies of specifications, standards, and drawings required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contract officer).

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), 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. REQUIREMENTS

3.1 Description. The control-panel assembly shall be as shown on Top Assembly [TA13217E7550](#) and as specified herein. The control-panel assembly shall have one input connector receptacle for accepting 115/120 volts, AC, 60 Hz; one output connector plug; and three output connector receptacles. The output voltage at the output connector receptacles shall be individually controlled by autotransformers. The control-panel assembly shall be provided with a pilot light and a circuit breaker for protection of the autotransformers from overload. The components shall be enclosed with a splashproof, spraytight, metal case.

3.1.1 Drawings. The drawings forming a part of this specification are end product drawings. No deviation from the prescribed dimensions or tolerances is permissible without prior approval of the contracting officer. Any data (e.g. shop drawings, layouts, flow sheets, processing procedures, etc.) prepared by the contractor or obtained from a vendor to support fabrication and manufacture of the production item shall be made available, upon request, for inspection by the contracting officer or his designated representative.

3.2 First article (preproduction model). When specified (see [6.2](#)), the contractor shall furnish one control-panel assembly for examination and testing within the time frame specified (see [6.2](#)) to prove prior to starting production that his production methods will produce control-panel assemblies that comply with the requirements of this specification. Examination and tests shall be as specified in Section 4 and shall be subject to surveillance and approval by the government (see [6.3](#)).

3.3 Materials. The materials shall be as specified herein and as shown on the applicable drawings. Materials used in the construction of these panel-assemblies shall be fungus inert. When materials are not specified, materials shall be used which enable the control-panel assemblies to meet the requirements of this specification. Note, however, that the tin content of control-panel assembly components and solder shall not exceed 97 percent, by mass. Tin shall be alloyed with a minimum of 3 percent lead, by mass (see 6.6). Acceptance or approval of any constituent material shall not be construed as a guarantee of the acceptance of the finished product.

3.4 Operation. Each control-panel assembly, with an input of 115 volts, AC, 60 Hz, and with the autotransformers set at maximum voltage, shall operate without malfunction when a load of two 100 watt, 110/115 volt lamps are connected in parallel to any one of the four output circuits with no load on the other three circuits. The autotransformer's output voltage shall be not more than 120 volts and not less than 112 volts.

3.5 Temperature and humidity. The control-panel assembly shall not be damaged by a storage temperature of 155°F with 80 to 98 percent relative humidity, and by operation at ambient temperatures from +120°F to -50°F with humidity uncontrolled.

3.6 Circuit breaker. The circuit breaker shall withstand a 15 percent overload for 60 minutes without overheating, and shall be set to trip at 25 percent overload within 60 minutes.

3.7 Splashproof and spraytight case. The case shall be splashproof and spraytight in accordance with [MIL-STD-108](#).

3.8 Operational reliability. The control-panel assembly, connected to a 115 volt, AC, 60Hz power source, and with a 5 ampere load, shall operate without malfunction for 50 hours.

3.9 Treatment and painting. The control-panel assembly shall be cleaned, treated, and painted in accordance with [MIL-T-704](#), Type A, lusterless, color as specified (see 6.2).

3.10 Moisture resistance. The electrical circuitry, including all components and connections, except as specified below, shall be protected from the effects of moisture by an overall treatment with a varnish or similar coating to the maximum extent practicable:

- a. Components or circuit elements that are inherently moisture resistant or which are hermetically sealed need not be treated.
- b. Components or circuit elements whose functions will be adversely affected by the varnish coating shall not be treated.

3.11 Identification marking. The identification markings shall be in accordance with [MIL-STD-130](#), as shown on the drawings.

3.12 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.13 Workmanship. The control-panel assembly shall be free from dirt, scale, flux, and other extraneous material. All electrical connections shall be secure, metal joints and seams shall be tight, and all edges shall be rounded or beveled.

4. VERIFICATION

4.1 Classification of inspections. The inspections and testing of control-panel assemblies shall be classified as follows:

- a. First article inspection (see 4.3).
- b. Conformance inspection (see 4.4).

4.2 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2.1 Disassembly inspection. Failure of any examination or test by the preproduction model shall be cause for disassembly, in the presence of a Government representative, of the preproduction model to the extent necessary to determine the cause of the failure. Each disassembled part shall be examined in detail for compliance with this specification and referenced drawings in regard to materials, dimensions, tolerances, and workmanship. Parts not complying with such requirements shall be rejected.

4.2.2 Component and material inspection. The contractor is responsible for insuring that components and materials used are manufactured, examined, and tested in accordance with referenced specifications and standards.

4.3 First article inspection.

4.3.1 Examination. The first article control-panel assembly shall be examined as specified in 4.5.1. Presence of one or more defects shall be cause for rejection and for performing the disassembly inspection specified in 4.2.1.

4.3.2 Tests. First article inspection shall subject one control-panel assembly to the examination and tests specified in 4.5.2. The manufacturer shall provide verification to the procuring activity that the first article inspection and tests have been performed on the control-panel assembly supplied to the requirements of this specification. One or more failures of first article tests shall be cause for rejection and for performing the disassembly inspection specified in 4.2.1.

4.4 Conformance inspection.

4.4.1 Examination. Each control panel shall be examined as specified in 4.5.1.

4.4.2 Tests.

4.4.2.1 Operation. Each control panel shall be tested as specified in 4.5.2.1. Failure of the test shall be cause for rejection.

4.4.2.2 Operational reliability. Samples selected in accordance with table I shall be tested as specified in 4.5.2.4.

TABLE I. Examination, zero defect sampling plan.

Lot size	Sample size
1	100 percent
2 - 25	2
26 - 150	8
151 - 500	13
501 - 1,200	20
1,201 - 10,000	32
10,001 - 35,000	50
35,001 - 150,000	80

4.5 Methods of inspection and tests.

4.5.1 Examination. Each control-panel assembly shall be examined as specified herein for the following defects. Presence of one or more defects shall be cause for rejection:

1. Dimensions not as specified.
2. Parts or components missing.
3. Parts or components misaligned.
4. Materials or components not as specified.
5. Wiring and connections not as specified.
6. Treatment and painting not as specified.
7. Identification markings not as specified.
8. Workmanship not as specified.

4.5.2 Tests.

4.5.2.1 Operation. Operate the control-panel assembly from a 115 volt, AC, 60 HZ power source. Set the autotransformer control dials on 100 volts. Connect two 100 watt, 110/115 volt lamps parallel to any one of the three circuits controlled by autotransformers. Actuate the master switch to the "ON" position. Set the appropriate autotransformer control dial to the maximum voltage position and operate for 10 minutes. Measure the output voltage. Reset the control dial to 100 volts. Repeat this test by alternately applying the lamp load to the other three output circuits. An output voltage of more than 120 volts, or less than 112 volts, or malfunction of the switch, shall constitute failure of this test.

4.5.2.2. Temperature and humidity. The chambers used for temperature and humidity shall maintain ambient temperatures within 4°F throughout the test.

4.5.2.2.1 Low temperature storage and operation. Cold soak the control-panel assembly at -50°F for a period of 12 hours. Test the control-panel assembly at maximum voltage for a period of 1 hour with one 100 watt lamp in each of the four circuits. At the end of each 15 minute period, adjust the autotransformers from maximum to minimum position and open and close the circuit breaker. Inability of the control-panel assembly to operate, or malfunction of any component, shall constitute failure of this test.

4.5.2.2.2 High temperature and humidity storage and operation. Place the control-panel assembly in a test chamber with 80 to 98 percent relative humidity at an ambient temperature of +155°F for 24 hours; reduce the temperature to +120°F for 24 hours prior to start of operational tests. Check the circuit breaker by adjusting the output load to 15 percent overload (5.75amperes) for 1 hour. Increase the output load to 25 percent overload (6.25 amperes) and determine the time required to trip the circuit open. Nonconformance to 3.4, damage to the breaker or other components during overload, or

nonconformance to [3.6](#) shall constitute failure of this test.

4.5.2.3 Splashproof and spraytight. Test the control-panel assembly case in accordance with [MIL-STD-108](#). Close and clamp the cover prior to start of test. Indication of moisture inside the control-panel assembly case shall constitute failure of this test.

4.5.2.4 Operational reliability. Operate the control-panel assembly from a 115 volt, AC, 60 Hz power source. Test the control-panel assembly with a 100 watt load on each of the four circuits for 50 hours at maximum voltage. Turn the circuit breaker switch off and on manually after each 1 hour period. Malfunction of any component shall constitute failure of this test.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see [6.2](#)). When packaging of material is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the Military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

5.2 Marking. Packages and shipping containers shall be marked in accordance with [MIL-STD-129](#).

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 control-panel assembly is intended to be used to regulate and adjust the voltage to the various circuits in portable heliport lighting installations.

6.2. Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, date of the specification, and the complete military or contractor's type or part number, as applicable (including the CAGE).
- b. When first article inspection is required and the time frame required for submission of the first article control-panel assembly (see [3.2](#)).
- c. Color required (see [3.9](#)).
- d. ASSIST Online database should be cited in the solicitation, and if required, the specific issue of individual documents referenced. If not otherwise specified, the versions of the individual documents referenced will be those in effect on the date of release of the solicitation (see [2.1](#)).
- c. Packaging requirements (see [5.1](#)).

6.3 First article. Any changes or deviations of production control-panel assemblies from the approved preproduction model during production will be subject to the approval of the contracting officer. Approval of the first article model will not relieve the contractor of his obligation to furnish control-panel assemblies conforming to this specification.

6.4 Data requirements. The contracting officer should include requirements for such data as technical publications, instructional materials, illustrated parts lists, and contractor's maintenance and operation manual to be furnished with each control-panel assembly.

6.5 Provisioning. The contracting officer should include provisioning requirements for repair parts and maintenance tools as necessary (including any special tools), and instructions on shipment of control-panel assemblies.

6.6 Tin whisker growth. The use of alloys with tin content greater than 97 percent, by mass, may exhibit tin whisker growth problems after manufacture. Tin whiskers may occur anytime from a day to years after manufacture and can develop under typical operating conditions, on products that use such materials. Conformal coatings applied over top of a whisker-prone surface will not prevent the formation of tin whiskers. Alloys of 3 percent lead, by mass, have shown to inhibit the growth of tin whiskers. For additional information on this matter, refer to [ASTM B545](#) (Standard Specification for Electrodeposited Coatings of Tin).

6.7 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. As of the dating of this document, the U.S. Environmentally Protection Agency (EPA) is focusing efforts on reducing 31 priority chemicals. The list of chemicals and additional information is available on their website at <http://www.epa.gov/osw/hazard/wastemin/priority.htm>. Included in the list of 31 priority chemicals are cadmium, lead, and mercury. Use of the materials on the list should be minimized or eliminated unless needed to meet the requirements specified herein (see section 3).

6.8 Subject (key word) listing.

Autotransformer
Splashproof
Spraytight

6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodians:
Army - CR4
DLA - CC

Preparing activity:
DLA - CC

(Project 6110-2012-001)

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.daps.dla.mil>.