



AEROSPACE STANDARD	AS85028™	REV. C
	Issued 2004-06 Revised 2012-07 Stabilized 2017-09	
	Superseding AS85028B	
Connector, Electrical, Rectangular, Individual Contact Sealing, Polarized Center Jackscrew, General Specification For		
FSC 5935		

RATIONALE

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1. SCOPE

1.1 Scope

This specification covers environment and fluid resisting, rectangular type, rack to panel electrical connectors (plugs and receptacles). These connectors utilize individually sealing removable crimp type contacts and are capable of continuous operation from –65 to +150 °C.

1.2 Classification

1.2.1 Part Number

1.2.1.1 Part Number for Connectors

The connector part number shall consist of the letter “M”, the basic number of the applicable specification sheet (see 3.1), and the applicable alpha-numeric characters, formulated as in the following example:

M85028/1-1P1RN

<u>M85028/1</u>	<u>-1</u>	<u>P1</u>	<u>R</u>	<u>N</u>
Basic Part Number (1.2.1.4)	Dash Number (1.2.1.5)	Contact Designator (1.3.3)	Center Hardware (1.2.1.7)	Polarization (1.2.1.8)

1.2.1.2 Part Number for Connector Accessories

The part number for the accessories shall consist of the letter “M”, the basic number of the specification sheet and assigned dash numbers as indicated on the applicable specification sheet (see 3.1) (Example: M85028/5-2).

1.2.1.3 Classes

E—Environmental and Fluid Resisting

1.2.1.4 Basic Part Number

The basic part number shall be as shown on the applicable specification sheet. Revision letters shall not be included.

1.2.1.5 Dash Number

The dash number shall be as shown on the applicable specification sheet for the basic part number.

1.2.1.6 Contact Designator

1.2.1.6.1 Connectors with Contacts

The following designators are used to indicate a full complement of applicable contacts (see 3.1).

P—Pin Contacts

S—Socket Contacts

1.2.1.6.2 Contact Wire Barrel Size

Contact wire barrel size shall be indicated by one of the following:

- a. No Contacts
- b. 24 to 28 wire gauge
- c. 20 to 24 wire gauge
- d. 16 to 20 wire gauge

1.2.1.6.3 Connectors Without Contacts

The following designators are used to designate connector less contacts. They will be used only when less than a 100% complement of one size wire barrel is used. Wire barrel size shall be designated by an "O".

A – Less Pin Contacts

B – Less Socket Contacts

1.2.1.7 Center Hardware Designator

The connector center hardware type shall be designated by one of the following:

R – Recessed jackscrew

J – Extended jackscrew

F – Threaded female

1.2.1.8 Polarization

The connector center hardware polarization shall be designated by a letter as shown on Figure 2 (see 3.4.6).

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and 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.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS-QQ-A-225	Aluminum and Aluminum Alloy, Bar, Rod, Wire, or Special Shapes; Rolled, Drawn, or Cold Finished; General Specification For
AS22520	Crimping Tools, Wire Termination General Specification For
AS22759	Wire, Electrical, Fluoropolymer-Insulated, Copper or Copper Alloy
AS39029	Contacts, Electrical Connector, General Specification For
AS39029/69	Connector Contact, Electrical Socket, Crimp Removable, for AS85028 Connectors
AS39029/70	Connector Contact, Electrical Pin, Crimp Removable, for AS85028 Connectors
AS81969	Installing and Removal Tools, Connector Electrical Contact, General Specification For
AS85028/1	Connector, Electric, Rectangular, Individual Contact Sealing, Polarized Center Jackscrew, Plug, Crimp Removable Pin Contacts, Class E
AS85028/2	Connector, Electric, Rectangular, Individual Contact Sealing, Polarized Center Hardware, Receptacle, Crimp Removable Socket Contacts, Class E
AS85028/3	Connector, Electric, Rectangular, Individual Contact Sealing, Polarized Center Jackscrew, Interfacial Seal, Size 16, Crimp Contacts
AS85028/4	Connector, Electric, Rectangular, Individual Contact Sealing, Polarized Center Jackscrew, Sealing Plug, Size 16, Crimp Removable Contacts
AS85028/5	Connector, Electric, Rectangular, Individual Contact Sealing, Polarized Center Jackscrew, Wire Seal, Size 16, Crimp Removable Contacts
AS85028/6	Connector, Electric, Rectangular, Individual Contact Sealing, Polarized Center Jackscrew, Replacement Tool, Wire Seal, Size 16, Crimp Removable Contacts

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM A240	Chromium and Chromium-Nickel Stainless Plate, Sheet, and Strip for Pressure Vessels and for General Applications
ASTM A342	Standard Test Methods for Permeability of Feebly Magnetic Materials
ASTM A484	Standard Specification for General Requirements for Stainless Steel Bars, Billets and Forgings
ASTM A582	Standard Specification for Free-Machining Stainless Steel Bars
ASTM A666	Steel, Sheet, Strip, Plate, and Flat Bar, Austenitic Stainless, Annealed or Cold-Worked
ASTM A693	Precipitation-Hardening Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
ASTM B2111	Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod and Wire
ASTM D5948	Standard Specification for Molding Compounds, Thermosetting

2.3 U.S. Government Publications

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, <http://assist.daps.dla.mil/quicksearch/>.

SPECIFICATIONS

Military

MIL-DTL-5002	Surface Treatments and Inorganic Coating for Metal Surfaces of Weapons Systems
MIL-A-8625	Anodic Coating for Aluminum
MIL-C-43616	Cleaning Compound, Aircraft Surfaces
MIL-DTL-45204	Gold Plating, Electrodeposited
MIL-DTL-55330	Connectors, Preparation for Delivery of

STANDARDS

Military

MIL-STD-202	Test Methods for Electronic and Electrical Component Parts
MIL-HDBK-454	General Guidelines for Electronic Equipment
MIL-STD-1285	Marking of Electrical and Electronic Parts
MIL-STD-1674	Insert Arrangements for MIL-C-85028(AS) Connector, Electric, Rectangular, Individual Contact Sealing, Polarized Center Jackscrew
SD-6	Provisions Governing Qualification

SPECIFICATION SHEETS

MIL-I-81969/21(AS)	Installing and Removal Tool, Electrical Connector, Contact Interfacial Seal, Type I, Class 1, Style B, Composition A
MIL-I-81969/22(AS)	Installing Tool, Electrical Connector, Contact Crimp Removable, Type I, Class 1, Style A, Composition A
MIL-I-81969/23(AS)	Removal Tool, Electrical Connector, Contact Crimp Removable, Type II, Class 1, Style A, Composition A

2.4 Other Publications

Available from the Document Automation and Production Service (DAPS), Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-9495, <https://assist.daps.dla.mil/quicksearch/>.

FED-STD-H28 Screw-Thread Standards for Federal Services

2.5 ECA Publications

Available from ECIA (Electronic Components Industry Association), 2214 Rock Hill Road, Suite 170, Herndon, VA 20170, Tel: 571-323-0294, www.eciaonline.org.

EIA 364	Electrical Connector/Socket Test Procedures Including Environmental Classifications
EIA 364-03	Altitude Immersion Test Procedure for Electrical Connectors
EIA 364-05	Contact Insertion, Release and Removal Force Test Procedure for Electrical Connectors
EIA 364-06	Contact Resistance Test Procedure for Electrical Connectors
EIA 364-10	Fluid Immersion Test Procedure for Electrical Connectors
EIA 364-13	Mating and Unmating Force Test Procedure for Electrical Connectors
EIA 364-14	Ozone Exposure Test Procedure for Electrical Connectors
EIA 364-17	Temperature Life With or Without Electrical Load Test Procedure for Electrical Connectors and Sockets
EIA 364-20	Withstanding Voltage Test Procedure for Electrical Connectors, Sockets and Coaxial Contacts
EIA 364-21	Insulation Resistance Test Procedure for Electrical Connectors, Sockets and Coaxial Contacts
EIA 364-26	Salt Spray Test Procedure for Electrical Connectors, Contacts, and Sockets
EIA 364-29	Contact Retention Test Procedure for Electrical Connectors
EIA 364-31	Humidity Test Procedure for Electrical Connectors and Sockets
EIA 364-32	Thermal Shock (Temperature Cycling) Test Procedure for Electrical Connectors and Sockets

2.6 ANSI Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ANSI/ASME Y14.5 Dimensioning and Tolerancing

ANSI/ISO 10012-1 Quality Assurance Requirements for Measuring Equipment

2.7 ASQ Publications

Available from American Society for Quality, 600 North Plankinton Avenue, Milwaukee, WI 53203, Tel: 800-248-1946 (United States or Canada)) or +1-414-272-8575 (International), www.asq.org.

ASQC Z1.4 Sampling Procedures and Tables for Inspection by Attributes

2.8 NCSL Publications

Available from National Conference of Standards Laboratories, 2995 Wilderness Place, Suite 107, Boulder, CO 80301-5404, Tel: 303-440-3339, www.ncsli.org.

NCSL Z540-1 General Requirements for Calibration Laboratories and Measuring and Test Equipment

3. REQUIREMENTS

3.1 Specification Sheets

The individual item requirements shall be as specified herein and in accordance with the applicable specification sheets. In the event of any conflict between requirements of this specification and the specification sheets, the latter shall govern (see 6.2).

3.2 Qualification

Connectors furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids (see 4.4 and 6.3).

3.2.1 Provisions Governing Qualification

The provisions governing qualification are specified in SD-6 (see 2.2).

3.2.2 Use of SAE Part Numbers

SAE part numbers shall not be applied to a product, except for qualification test samples (see 6.3), until notification has been received from the activity responsible for qualification that the product has been approved for listing on the Qualified Products List.

3.3 Materials

Materials shall be as specified herein. When a definite material is not specified, a material shall be used which will enable the connectors to meet the performance requirements of this specification. Acceptance or approval of any constituent material shall not be construed as a guarantee of the acceptance of the finished product.

3.3.1 Dissimilar Metals

When dissimilar metals are employed in intimate contact with each other, suitable protection against electrolytic corrosion shall be provided as specified in requirement 16 of MIL-HDBK-454.

3.3.2 Nonmagnetic Material

Unless otherwise specified herein, all component parts of connectors shall be of a nonferrous material or a material generally considered to be nonmagnetic (see 3.6.8).

3.3.3 Contact Materials

Unless otherwise specified, contacts shall be made of suitably conductive copper based alloys. All contacts shall be suitably protected from corrosion.

3.3.3.1 Contact Plating

Contacts shall be gold plated in accordance with MIL-DTL-45204, type II, grade B or C, class 1 over a suitable underplating (underplating shall have no silver content), except that the accessory (hood) on socket contacts shall be suitably protected from corrosion.

3.3.4 Hardware Materials

The center polarizing hardware shall (Reference Figure 2) be of high grade aluminum alloy per AMS-QQ-A-225/ASTM B211. Jackscrews and shells shall be corrosion resistant steel, type 303 per ASTM A484/A582.

3.3.4.1 Finish

Aluminum parts shall be anodized per MIL-A-8625, type II, dyed gray. All other metal parts shall be electrolytic polish per MIL-DTL-5002 or protected to meet the performance requirements of this specification.

3.3.5 Dielectric Materials

3.3.5.1 Plastic Insert Material

Plastic insert material shall be a high grade rigid dielectric having electrical and mechanical characteristics suitable for the purpose intended. The material shall conform to ASTM D5948.

3.3.5.2 Resilient Seal Material

Materials shall be high grade resilient dielectric having hardness, electrical and mechanical characteristics suitable for the purpose intended.

3.4 Design, Construction, and Physical Dimensions

Connectors shall be of the design, construction, and physical dimensions specified herein and in the individual specification sheets. Connectors shall be designed so that neither the pins nor the sockets will be damaged during normal mating of counterpart connectors.

3.4.1 Contacts

Contacts shall conform to AS39029.