



## Standard Specification for Solid State Bargraph Meters for Shipboard Use [Metric]<sup>1</sup>

This standard is issued under the fixed designation F 1755M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This specification provides the requirements for design, construction, performance, and testing of solid state bargraph-type indicating meters.

1.2 The solid state bargraph meters covered by this specification are intended for use in shipboard applications of electrical measurement. This specification covers the requirements and quality assurance provisions for solid state, panel-type (edgewise), and rectangular switchboard-type instruments, which use light-emitting diodes (LEDs) for bargraph indication and optional digital displays.

1.3 This specification's requirements may be invoked for specialized measurement applications where another quantity, for example, position, weight, concentration of a trace element in an atmosphere sample, and so forth, is converted to electrical energy for display and measurement. Special dial markings shall be specified for such cases.

1.4 The values stated in metric units are to be regarded as the standard. The values given in parentheses are for information only.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

B 117 Practice for Operating Salt Spray (Fog) Apparatus<sup>2</sup>

D 3951 Practice for Commercial Packaging<sup>3</sup>

F 1166 Practice for Human Engineering Design for Marine Systems, Equipment and Facilities<sup>4</sup>

#### 2.2 Federal Specifications:

TT-E-529 Enamel, Alkyd, Semigloss, Low VOC Content<sup>5</sup>

#### 2.3 Federal Standards:

H28 Screw Thread Standards for Federal Services<sup>5</sup>

### 3. Terminology

#### 3.1 Definitions of Terms Specific to This Standard:

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.10 on Electrical.

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<sup>2</sup> Annual Book of ASTM Standards, Vol 03.02.

<sup>3</sup> Annual Book of ASTM Standards, Vol 15.09.

<sup>4</sup> Annual Book of ASTM Standards, Vol 01.07.

<sup>5</sup> Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, ATTN: NPODS.

3.1.1 *accuracy, n*—the accuracy is a number that defines the limit of errors expressed as a percentage of full-scale value.

3.1.2 *center-zero meter, n*—meter with display mode characterized by a sequentially illuminated string of LEDs starting at the center scale zero position and extending in either direction from zero, proportional to the polarity and magnitude of the input signal.

3.1.3 *dual bargraph display, n*—two completely independent bargraph displays included in a single enclosure.

3.1.4 *end-scale value, n*—the value of the actuating electrical quantity that corresponds to end scale indication. When zero is not at the end or at the electrical center of the scale, the higher value is used. See Table 1.

3.1.5 *end-zero meter, n*—meter with display mode characterized by a sequentially illuminated string of LEDs starting from a zero point, normally at the left for switchboard-style meters or horizontally installed edgewise meters, or the bottom of vertically installed edgewise meters, that extends in the direction of full-scale value.

3.1.6 *full-scale value, n*—full-scale value is the largest value of the actuating electrical quantity, which can be indicated on the scale. For instruments with zero between the ends of the scale, the full-scale value is the arithmetic sum of the values of the actuating electrical quantity corresponding to the two ends of the scale.

3.1.7 *response time, n*—the response time is the time required for the indicating means to display a new value after a step change has occurred in the measured quantity to a new constant value.

3.1.8 *scale division, n*—a scale division is the increment between the centers of two consecutive scale marks. The number of scale marks is one more than the number of scale divisions. For example, 10 scale divisions require 11 scale marks.

3.1.8.1 *linear scale divisions, n*—linear scale divisions are scale divisions that are spaced an equal distance apart and of the same value, for example, scale divisions spaced 5 A apart on a 100-A meter.

3.1.8.2 *nonlinear scale divisions, n*—nonlinear scale divisions are scale divisions of the same value spaced an unequal distance apart.