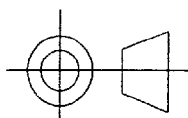


|                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BRITISH STANDARDS INSTITUTION</b><br>389 CHISWICK HIGH ROAD, LONDON, W4 4AL                                                                                                                                                           | BS CECC 41 301 - 005<br><br>Issue 3<br>April 1995<br><br>Change Ref: 31/4211<br><br>PAGE 1 OF 18                                                                                                                                                                                               |
| Specification available from: As shown in PD9002, CECC 00 200 AND<br><br>MEGGITT ELECTRONIC COMPONENTS LIMITED<br>WESTMEAD INDUSTRIAL ESTATE<br>WESTLEA<br>SWINDON, WILTSHIRE SN5 7US<br>TEL: 01793 487301 FAX: 01793 610217 TLX: 449112 | MANUFACTURER'S TYPE NUMBER<br>MH1<br>SEE CECC 00 200                                                                                                                                                                                                                                           |
| ELECTRONIC COMPONENTS OF ASSESSED QUALITY DETAIL<br>SPECIFICATION IN ACCORDANCE WITH<br><br>BS CECC 41 000 1977<br>BS CECC 41 300 1979                                                                                                   | <div> LOW POWER<br/> SINGLE TURN<br/> ROTARY POTENTIOMETERS </div> <div> CONSTRUCTION:<br/><br/> RESISTIVE ELEMENT:<br/> CARBON COMPOSITION<br/><br/> SPINDLE: INSULATED FROM<br/> RESISTIVE ELEMENT<br/><br/> SEALING: SPINDLE AND PANEL<br/> SEALED </div> <div> ASSESSMENT LEVEL "S" </div> |

OUTLINE AND DIMENSIONS:  
FIRST ANGLE PROJECTION  
SEE APPENDIX A



All dimensions in millimetres.

**TABLE 1**

|    | Rated Dissipation<br>(W at 70°) |                       | Limiting element<br>voltage (V dc or<br>ac rms) | Isolation voltage<br>(V dc or ac peak) |                  |
|----|---------------------------------|-----------------------|-------------------------------------------------|----------------------------------------|------------------|
|    | Resistance law A                | Resistance laws B & C |                                                 | Normal air pressure                    | Low air pressure |
| AA | 0.25                            | 0.125                 | 250                                             | 360                                    | 240              |

## 1) RATINGS AND CHARACTERISTICS

|                                                       |                                                                                                      |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Resistance law                                        | Law A (linear) Resistance laws B & C not applicable.                                                 |
| Resistance range                                      | The range of values available in each law and in each style is given in the Qualified Products List. |
| Standard selection tolerances                         | +/-20% or 10%                                                                                        |
| Temperature characteristic of resistance (20° to 70°) | •R/R : ≤+/- 6.5%<br>(•R/R/•T : ≤+/- 1300 ppm/°C)                                                     |
| Climatic category                                     | 40/070/56                                                                                            |

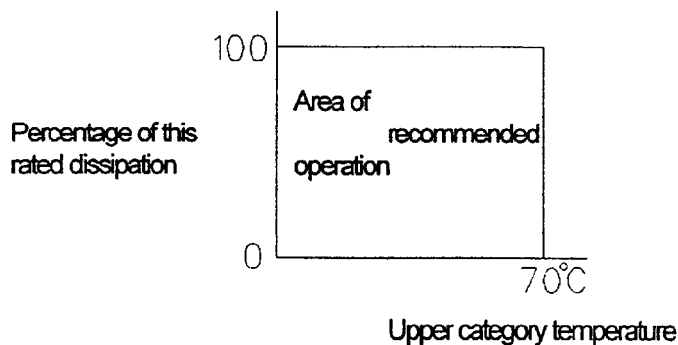
The preferred values are those of the E6 series of IEC 63. Where the use of intermediate values is essential, they should, wherever possible, be chosen from a series in that document.

Refer to Qualified Products List CECC 00 200 for details of manufacturers approved to this specification.

|                                                                             |                                                                         |
|-----------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Vibration severity                                                          | 10 Hz to 500 Hz; 0.75 mm or 98 m/s <sup>2</sup> (whichever is the less) |
| Bump severity                                                               | 390 m/s <sup>2</sup> ; 4000 bumps                                       |
| Low air pressure                                                            | 8,5 k Pa (85 mbar)                                                      |
| Limits of resistance change<br>(after 1,000 h electrical<br>endurance test) | +/-15%                                                                  |
| Starting torque                                                             | 7,5 mNm to 90 mNm                                                       |
| Limiting slider current                                                     | 75 mA                                                                   |
| Terminal Resistance                                                         | ≤25 for R≤1K, ≤50 for R>1K                                              |

## 1.1 Derating

Potentiometers covered by this specification are derated according to



## 2) MARKING

2.1 The following marking information, in the order of importance given below, is required:

- 1) Rated resistance.
- 2) Tolerance on rated resistance.
- 3) Resistance law (if other than linear).
- 4) Detail specification and style.
- 5) Date of acceptance. A nationally approved code may be used.
- 6) Details of spindle and bush (if not implicit in (4) above). This may be in code form.
- 7) Manufacturer's name and trade mark.

2.2 The potentiometer shall be clearly marked with (1) and (2) above using, where practicable, one of the coding methods specified in IEC Publication 62, and with as many of the remaining items as is practicable.

2.3 The package containing the potentiometer shall be clearly marked with (1) to (7).

2.4 Any additional marking shall be so applied that no confusion can arise.

**3) RELATED DOCUMENTS**

BS CECC 41 000 : 1977

BS CECC 41 300 : 1979

CECC 00 200 Qualified Products List

**4) ORDERING INFORMATION**

Orders for potentiometers covered by this specification shall contain the following information:

Resistance value and tolerance

Resistance law

Number of the detail specification and style reference

Spindle and bush dimensions, if not implicit in the style reference (See Appendices A to D).

**5) CERTIFIED TEST RECORDS**

National Authorised Institutions shall indicate in this clause whether Certified Test Records shall be prepared in accordance with 3.5 of CECC 41 000.

**6) DELAYED DELIVERY**

The provisions of CECC 41 000, 3.6 shall apply except that the Inspection Level shall be reduced to S-2 and (except for carbon composition types) the period shall be extended to two years. The period for carbon composition types shall remain at one year.

**7) ADDITIONAL INFORMATION (Not for inspection purposes)****8) INSPECTION REQUIREMENTS (See Table 2)**

When drying is called for, Procedure 1 of 4.2 of CECC 41 000 shall be used.

The values representative of the whole approved range shall be tested within one year (Groups A, B & C only).

TABLE 2

| Clause Number and Test<br>(See Note 1)                                          | D<br>or<br>ND | Conditions of Test                                                                                 | IL           | AQL  | Performance<br>Requirements<br>(See Note 1)                                                                                                    |
|---------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------|--------------|------|------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                 |               |                                                                                                    | (See Note 2) |      |                                                                                                                                                |
| <u>GROUP A INSPECTION</u><br>To be conducted on a<br>sampling basis, lot-by-lot |               |                                                                                                    |              |      |                                                                                                                                                |
| <u>Sub Group A1</u>                                                             | ND            |                                                                                                    | II           | 4.0% |                                                                                                                                                |
| 4.3.1 Visual Inspection                                                         |               |                                                                                                    |              |      | As in 4.3.1                                                                                                                                    |
| <u>Sub Group A2</u>                                                             | ND            |                                                                                                    | II           | 1.0% |                                                                                                                                                |
| 4.3.2 Marking                                                                   |               |                                                                                                    |              |      | As in 4.3.2                                                                                                                                    |
| 4.5 Element resistance                                                          |               |                                                                                                    |              |      | As in 4.5.1                                                                                                                                    |
| <u>Sub Group A3</u>                                                             | ND            |                                                                                                    | S-2          | 4.0% |                                                                                                                                                |
| 4.3.3 Dimensions<br>(gauging)                                                   |               |                                                                                                    |              |      | As specified in App A or C                                                                                                                     |
| 4.3.5 Total mechanical<br>travel                                                |               |                                                                                                    |              |      | 300° +/-10°                                                                                                                                    |
| <u>Sub Group A4</u>                                                             | ND            |                                                                                                    | S-2          | 4.0% |                                                                                                                                                |
| 4.6 Terminal resistance                                                         |               | Resistance a to b<br>Resistance b to c                                                             |              |      | $R_t \leq 25R$ for $R \leq 1K\Omega$<br>$\leq 50R$ for $R > 1K\Omega$                                                                          |
| 4.15 Rotational noise                                                           |               | Method B                                                                                           |              |      | $R_{\text{rot}}$ : 2% of resistive<br>element                                                                                                  |
| 4.12 Voltage proof                                                              |               | Insulated styles only                                                                              |              |      | As in 4.12.5<br>(500V AC Peak)                                                                                                                 |
| <u>GROUP B INSPECTION</u><br>To be conducted on a<br>sampling basis, lot-by-lot |               |                                                                                                    |              |      |                                                                                                                                                |
| <u>Sub Group B1</u>                                                             | D             |                                                                                                    | S-2          | 1.5% |                                                                                                                                                |
| 4.16 Starting torque<br>- Sealing                                               |               | Room temperature<br><br>Appendix E to this<br>document shall be used                               |              |      | 7,5 mNm to 90mNm<br><br>As given in Appendix E                                                                                                 |
| <u>Sub Group B2</u>                                                             | ND            |                                                                                                    | S-2          | 1,5% |                                                                                                                                                |
| 4.23.1 Soldering -<br>Solderability                                             |               | Soldering iron method:<br>Soldering iron: Size B<br>Duration: 2 +/- 0,5 s<br><br>At 300°C to 350°C |              |      | The terminations shall be<br>examined for good<br>tinning as evidence by<br>free flowing of the solder<br>with wetting of the<br>terminations. |

| Clause Number and Test<br>(See Note 1)                                                                         | D<br>or<br>ND                | Conditions of Test                           | IL                                                             | AQL                                                         |                                                                       | Performance<br>Requirements<br>(See Note 1) |              |
|----------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|--------------|
| <u>GROUP C INSPECTION</u><br>To be conducted on a<br>sampling basis, at the<br>periodicity given in column "P" | D                            |                                              | Sample size &<br>criterion of<br>acceptability (See<br>Note 3) |                                                             |                                                                       |                                             |              |
|                                                                                                                |                              |                                              | P                                                              | n                                                           | c                                                                     |                                             |              |
|                                                                                                                |                              |                                              | 3                                                              | 8                                                           | 1                                                                     |                                             |              |
|                                                                                                                |                              |                                              | 4.18                                                           | End stop torque                                             | Visual examination                                                    |                                             | As in 4.18.1 |
|                                                                                                                |                              |                                              | 4.20                                                           | Thrust and pull on<br>the spindle                           | a) As specified in<br>4.20.2 (25 Newtons)<br>Continuity (3 specimens) |                                             | As in 4.20.2 |
|                                                                                                                |                              |                                              |                                                                | b) As specified in<br>4.20.3 (25 Newtons)<br>(3 specimens)  | $\Delta V_{ab} : \leq 3\%$<br>Vac                                     |                                             |              |
|                                                                                                                |                              |                                              |                                                                | c) As specified in<br>4.20.4 (125 Newtons)<br>(2 specimens) |                                                                       |                                             |              |
|                                                                                                                |                              |                                              |                                                                | Visual examination                                          | As in 4.20.4                                                          |                                             |              |
|                                                                                                                |                              |                                              | 4.30                                                           | Mechanical<br>endurance<br>(potentiometers)                 | See Note 4                                                            |                                             |              |
|                                                                                                                |                              |                                              |                                                                | Number of cycles: 2500<br>Rate: 15 cycles per min           |                                                                       |                                             |              |
|                                                                                                                | Visual examination           | As in 4.30.6                                 |                                                                |                                                             |                                                                       |                                             |              |
|                                                                                                                | Element resistance           | $\Delta R/R : \leq \pm 10\%$                 |                                                                |                                                             |                                                                       |                                             |              |
|                                                                                                                | Starting torque              | 7,5 mNm to 90 mNm                            |                                                                |                                                             |                                                                       |                                             |              |
|                                                                                                                | Rotational noise<br>Method B | $R_{EN} : \leq 4\%$ of element<br>resistance |                                                                |                                                             |                                                                       |                                             |              |

| Clause Number and Test<br>(See Note 1) | D<br>or<br>ND | Conditions of Test                          | Sample size &<br>criterion of<br>acceptability (See<br>Note 3) |    |   | Performance<br>Requirements<br>(See Note 1) |
|----------------------------------------|---------------|---------------------------------------------|----------------------------------------------------------------|----|---|---------------------------------------------|
|                                        |               |                                             | P                                                              | n  | c |                                             |
| <u>Sub Group C2</u>                    | D             |                                             | 3                                                              | 13 | 2 |                                             |
| <u>7 Specimens</u>                     |               |                                             |                                                                |    |   |                                             |
| 4.21 Robustness of terminations        |               | Tensile only - rigid terminations - test Ua |                                                                |    |   |                                             |
|                                        |               | Visual Examination                          |                                                                |    |   | As in 4.21.8 (1)                            |
|                                        |               | Element resistance                          |                                                                |    |   | $\pm R/R: \leq \pm 1\%$                     |
| 4.23 Soldering - resistance to heat    |               | Soldering iron method:                      |                                                                |    |   |                                             |
|                                        |               | Test T of IEC 68-2-20                       |                                                                |    |   |                                             |
|                                        |               | Soldering iron size B                       |                                                                |    |   |                                             |
|                                        |               | 350°C for 10 seconds                        |                                                                |    |   |                                             |
|                                        |               | Element resistance                          |                                                                |    |   | $\pm R/R: \leq 2\%$                         |
|                                        |               | Terminal resistance                         |                                                                |    |   |                                             |
|                                        |               | Resistance a to b                           |                                                                |    |   | $R: \leq 25$ for $R \leq 1K\Omega$          |
|                                        |               | Resistance b to c                           |                                                                |    |   | $\leq 50$ for $R > 1K\Omega$                |
| <u>Remaining 6 specimens</u>           |               |                                             |                                                                |    |   |                                             |
| 4.24 Change of temperature             |               | See Note 5                                  |                                                                |    |   |                                             |
|                                        |               | T <sub>A</sub> : Lower category temp        |                                                                |    |   |                                             |
|                                        |               | T <sub>B</sub> : Upper category temp        |                                                                |    |   |                                             |
|                                        |               | Visual examination                          |                                                                |    |   | As in 4.24.5                                |
|                                        |               | Element resistance                          |                                                                |    |   | $\pm R/R: \leq \pm 5\%$                     |
| 4.26 Bump (see Note 6)                 |               | Acceleration: 390 m/s <sup>2</sup>          |                                                                |    |   |                                             |
|                                        |               | No of Bumps: 4000                           |                                                                |    |   |                                             |
|                                        |               | See Note 7                                  |                                                                |    |   |                                             |
|                                        |               | Visual examination                          |                                                                |    |   | As in 4.26.3                                |
|                                        |               | Element resistance                          |                                                                |    |   | $\pm R/R: \leq \pm 2\%$                     |