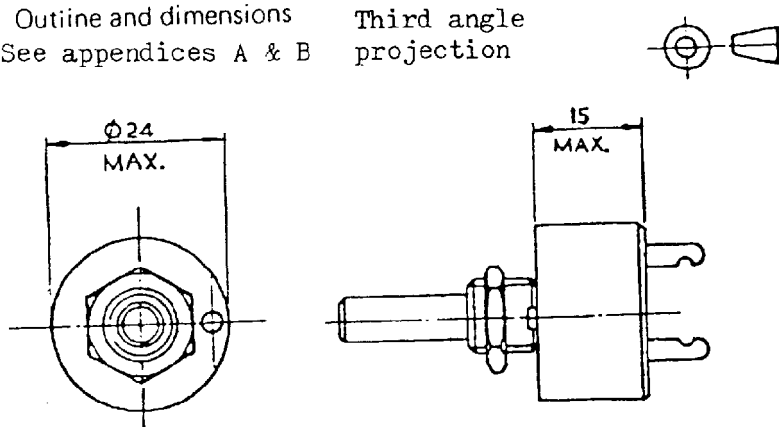


BRITISH STANDARDS INSTITUTION 2, PARK STREET, LONDON, W1A 2BS	BS CECC 41 301-003 Issue 1 September 1982  Page 1 of 20 pages
Specification available from:- As shown in PD 9002 and CECC 00 200 and:- COLVERN LTD, SPRING GARDENS, ROMFORD, ESSEX RM7 9LP Telephone: Romford 62222 Telex 23984	MANUFACTURER'S TYPE NUMBER CT 1451, CT 1464, CT 14351 CT 14364 See PD 9002 and CECC 00 200 For ordering information see clause 4
ELECTRONIC COMPONENTS OF ASSESSED QUALITY DETAIL SPECIFICATION IN ACCORDANCE WITH BS CECC 41 000:1977 BS CECC 41 300:1979 Outline and dimensions See appendices A & B Third angle projection  Marking information see clause 2 Dimensions in millimetres	LOW POWER, SINGLE TURN ROTARY POTENTIOMETERS NONWIREWOUND CONSTRUCTION SPINDLE INSULATED FROM RESISTANCE ELEMENT. SPINDLE AND PANEL SEALED. ASSESSMENT LEVEL S + ADDITIONAL ASSESSMENT

1. RATINGS AND CHARACTERISTICS

Resistance Laws	Linear (Law A), Non-linear (Law B) } See table 2 Reverse non-linear (Law C)
Resistance range	The range of values available in each law and in each style will be given in the Qualified products list.
Standard selection tolerances	$\pm 20\%$, $\pm 10\%$
Climatic category	55/125/56
Rated dissipation at 70° C	See table 1
Limiting element voltage	700 V d.c. or a.c. r.m.s.

The preferred values are those of the E3 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 PD 9002 and/or CECC 00200 for details of manufacturers approved to this specification.

Temperature characteristic of resistance (20°C to 70°C)	$\Delta R/R \leq \pm 1.25\%$ $\Delta R/R/\Delta T \leq \pm 250 \text{ ppm/}^\circ\text{C}$
Vibration severity	10 Hz to 500 Hz; 0.75 mm or 98 m/s ² (whichever is less)
Bump severity	390 m/s ² ; 4000 bumps
Low air pressure	8.5 kPa (85 mbar)
Limits of resistance change (<u>a</u> to <u>c</u>) after 1000 h electrical endurance test	$\pm 10\% R + 0.5\Omega$
Starting torque	3.5 mNm to 100 mNm
Limiting slider current	$\sqrt{\frac{\text{rated dissipation}}{\text{rated resistance}}}$ or 100 mA whichever is less
Terminal resistance	$\leq 1\%$ of R or 2Ω whichever is greater

TABLE 1

Style	Rated dissipation (W at 70°C)		Limiting element voltage (V d.c. or a.c. r.m.s.)	Isolation voltage (V d.c. or a.c. peak)	
	Resistance law A	Resistance laws B&C		Normal air pressure	Low air pressure
AC	2	1	700	1000	700
BC	2	1	700	1000	700
CC	2	1	700	1000	700
DC	2	1	700	1000	700

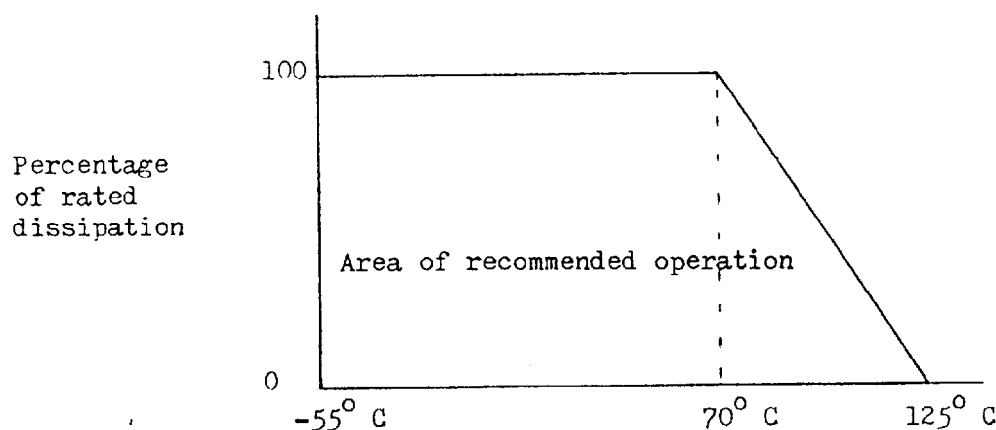
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TABLE 2 LIMITS OF RESISTANCE LAW

Resistance law	% angle of effective rotation	Output ratio $\% \frac{V_{ab}}{V_{ac}}$
A (Linear)	30 to 36	28 to 38
	47 to 53	45 to 55
	64 to 70	62 to 72
B (Logarithmic)	30 to 36	1.5 to 8
	64 to 70	10 to 40
C (Reverse logarithmic)	30 to 36	60 to 90
	64 to 70	92 to 98.5

1.1 DERATING

Potentiometers covered by this specification are derated according to:-



2. MARKING

2.1 The following information, in 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)
- (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 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) above.

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

3. RELATED DOCUMENTS

BS CECC 41 000	Generic specification for potentiometers.
BS CECC 41 300	Sectional specification: low power, single turn rotary potentiometers.
BS E9000	Basic rules
BS 6001	Sampling procedures and tables for inspection by attributes.
CECC 00 200	Qualified products list.
PD 9002	Qualified products list.

4. ORDERING INFORMATION

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

- Resistance value and tolerance.
- Resistance law (if other than linear)
- Number of detail specification and style reference.
- Spindle and bush dimensions, if not implicit in the style reference.

4.2 The styles covered by this specification are:

CT 1451	Style AC
CT 1464	Style BC
CT 14351	Style CC
CT 14364	Style DC

5. CERTIFIED TEST RECORDS

Certified test records shall be prepared in accordance with 3.5 of BS CECC 41 000.

6. DELAYED DELIVERY

The provisions of 3.6 of BS CECC 41 000 shall apply, except that the inspection level shall be reduced to S-2 and the period shall be extended to two years.

7. INSPECTION REQUIREMENTS

- 7.1 When drying is called for, Procedure I of 4.2 of BS CECC 41 000 shall be used.
- 7.2 In the quality conformance inspection the values representative of the whole approved range shall be tested within one year, (Groups A, B and C only)

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Test (See note 1)	D or ND	Conditions of test	IL	AQL	Performance Requirements (See note 1)
<u>GROUP A INSPECTION</u>					
To be conducted on a 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 (gauging)					See appendix A
4.3.5 Total mechanical travel					$285^{\circ} \pm 5^{\circ}$
<u>Sub-group A4</u>	ND		S-2	4.0%	
4.6 Terminal resistance		Resistance <u>a</u> to <u>b</u> Resistance <u>b</u> to <u>c</u>			$\leq 2\Omega$ or 1% of R_{ac} $\leq 2\Omega$ or 1% of R_{ac} Whichever is the greater
4.15 Rotational noise		Method B			$\leq 3\%$ of R_{ac}
4.12 Voltage proof		Normal air pressure			As in 4.12.5
<u>GROUP B INSPECTION</u>					
To be conducted on a sampling basis, lot by lot					
<u>Sub-group B1</u>	D		S-2	1.5%	
4.16 Starting torque		Room temperature			3.5 mNm to 100 mNm
- Sealing (Panel and spindle sealed)		Appendix C of this document shall be used Test A2			As given in appendix C

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Test (See note 1)	D or ND	Conditions of test	IL	AQL	Performance Requirements (See note 1)							
<u>Sub-group B2</u> 4.23.1 Soldering- Solderability	ND	Soldering iron method Soldering iron size B Temperature: 300 °C to 350 °C Duration: 2 ± 0.5 s	S-2	1.5%	The terminations shall be examined for good tinning as evidenced by free flowing of the solder with wetting of the terminations							
<u>GROUP C INSPECTION</u> To be conducted on a sampling basis, at the periodicity given in column "P". <u>Sub-group C1</u> 4.18 End-stop torque 4.20 Thrust and pull on the spindle 4.30 Mechanical endurance (potentiometers)	D	Torque: 2000 mNm Visual examination <u>Three specimens</u> As specified in 4.20.2 Continuity <u>Three specimens</u> As specified in 4.20.3 <u>Remaining specimens</u> As specified in 4.20.4 Visual examination Number of cycles: 25000 Rate: 10 to 17 cycles/min Visual examination Element resistance Starting torque Rotational noise Method B	Sample size & criterion of acceptability (See note 3) <table><tr><th>P</th><th>n</th><th>c</th></tr><tr><td>3</td><td>8</td><td>1</td></tr></table>			P	n	c	3	8	1	As in 4.18.1 As in 4.20.2 $\Delta \frac{V_{ab}}{V_{ac}} : \leq 1.0\%$ As in 4.20.4 As in 4.30.6 $\Delta R : \leq \pm(3\% R + 0.10)$ 3.5 mNm to 100 mNm $\leq 5\%$ of R_{ac}
P	n	c										
3	8	1										

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