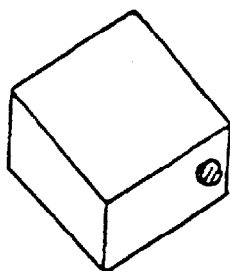


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ELECTRONIC COMPONENTS OF ASSESSED
QUALITY IN ACCORDANCE WITH CECC
41 000, CECC 41 100 and CECC 41 101



Form S series
Dimensional
Patterns see
Appendix A

For individual details see
Tables 1 and 2 and Appendix A

CECC 41 101-007
CECC 41 101-008
CECC 41 101-009



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I.S. 1107 : 1990
(CECC 41 101-007/-008/-009)

DETAIL SPECIFICATION:
LEAD SCREW ACTUATED PRESET
POTENTIOMETERS, SQUARE FORMS

CONSTRUCTION: CONTAINER SEALED
RESISTIVE ELEMENT: NON-WIREWOUND
ACTUATING DEVICE: INSULATED FROM
RESISTIVE ELEMENT
SLIPPING CLUTCH: AT EACH END OF
TRAVEL
RIGID TERMINATIONS: SUITABLE FOR
MOUNTING ON PRINTED WIRING BOARDS

ASSESSMENT LEVEL "S"

Table 1: Style Reference (See Note)

Detail Specification Number	Dimensional Pattern (See Appendix A)									
	S01A	S01B	S01C	S02A	S02B	S02C	S03A	S03B	S03C	S09
CECC 41101-007	A*	B*	C*	D*	E*	F*	G*	H*	J*	K*
CECC 41101-008	A*	B*	C*	D*	E*	F*	G*	H*	J*	K*
	S04A	S04B	S05A	S05B	S06A	S06B	S07A	S07B	S08A	S08B
CECC 41101-009	A*	B*	C*	D*	E*	F*	G*	H*	J*	K*

Note: Asterisk to be replaced by the letter appropriate to the temperature characteristic (See 'Ratings and Characteristics'). The style reference code shown here is arbitrarily chosen and relates to this detail specification only.

See the current Qualified Products List for the availability of
components qualified to this detail specification.

TABLE 2

Detail Specification Number	Climatic category	Limits of resistance change (%AR)		Rotational noise		Limiting slider current (mA max)
		Climatic sequence Damp heat, steady state Mechanical endurance Electrical endurance at 70°C (a - c) Electrical endurance at upper category temperature (a - c)	Electrical endurance at 70°C (a - b) Electrical endurance at upper category temperature (a - b)	R < 100Ω	R > 100Ω	
CECC 41 101 - 007	55/125/21	ΔR: < ± (3%R + 0,1Ω)	ΔR: < ± (5%R + 0,1Ω)	≤ 5Ω	≤ 5% R	100
CECC 41 101 - 008	55/125/56	ΔR: < ± (2%R + 0,1Ω)	ΔR: < ± (3%R + 0,1Ω)	≤ 3Ω	≤ 3% R	
CECC 41 101 - 009	55/125/21	ΔR: < ± (3%R + 0,1Ω)	ΔR: < ± (5%R + 0,1Ω)	≤ 5Ω	≤ 5% R	

Detail Specification Number	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)	
			Normal	Low air pressure
CECC 41 101 - 007	0,5	250	350	200
CECC 41 101 - 008				
CECC 41 101 - 009	0,25	200	300	200

TABLE 3

Rated resistance	Rated voltage or limiting element voltage	Dissipation at 70°C	Limiting slider current
Ω	V	W	mA
22	3,3	0,5	100
47	4,8	↑	100
100	7,0		70
220	10,5		47
470	15,3		32
1000	22,4		22
2200	33,2		15
4700	48,5		10
10000	70,7		7
22000	105		4,7
47000	153		3,2
100000	223	0,5	2,2
220000	250	0,28	1,1
470000	250	0,13	0,53
1000000	250	0,06	0,25

Rated resistance	Rated voltage or limiting element voltage	Dissipation at 70°C	Limiting slider current
Ω	V	W	mA
22	2,4	0,25	100
47	3,4	↑	73
100	5,0		50
220	7,4		34
470	10,8		23
1000	15,8		16
2200	23,5		11
4700	34,3		7,3
10000	50,0		5,0
22000	74,2		3,4
47000	108		2,3
100000	158	0,25	1,6
220000	200	0,18	0,91
470000	200	0,09	0,42
1000000	200	0,04	0,20

CECC 41101-007
and
CECC 41101-008

CECC 41101-009

1. RATINGS AND CHARACTERISTICS

*Resistance range

The range of values in each style is given in the Qualified Products List.

Standard selection tolerances

$\pm 20\%$, $\pm 10\%$ or $\pm 5\%$

Temperature characteristic of resistance (20° to 70°C)

Code letter	$\Delta R/R$ (20/70)	Temp. coeff. (10 ⁻⁶ /K)
K	$\pm 0,5\%$	± 100
L	$\pm 0,75\%$	± 150
V	$\pm 1,25\%$	± 250

Climatic category

See Table 2

Vibration severity

10 Hz to 500 Hz; 0,75 mm or 98 m/s² (whichever is the less severe)

Bump severity

390 m/s²; 4 000 bumps

or

Shock severity

490 m/s²; 11 ms

Low air pressure

8,5 kPa (85 mbar)

Limits of resistance change (a-c) (after 1 000 h electrical endurance test)

See Table 2

Starting torque

≤ 35 mN.m

Total mechanical travel

See Appendix A

Limiting slider current

See Table 2

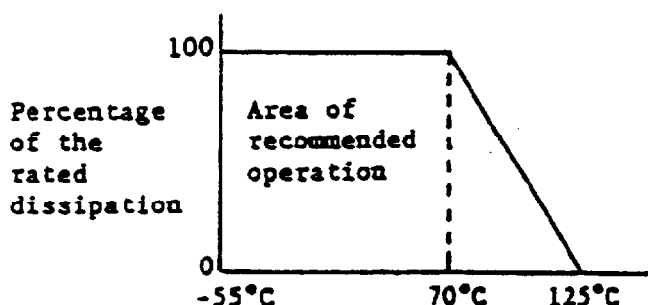
Rotational noise

See Table 2

*The preferred values are those of the E3 series of IEC63. Where the use of intermediate values is essential, they should, wherever possible, be chosen from a series in that document.

1.1 Derating

Potentiometers covered by this specification are derated according to the curve :



When mounted in conditions which severely limit circulation of air around the potentiometer (i.e. when stacked) further derating may be necessary.

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) Detail specification and style
 - 4) Date of acceptance. A nationally approved code may be used.
 - 5) 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 (5)
- 2.4 Any additional marking shall be so applied that no confusion can arise.

3. RELATED DOCUMENTS

- IEC 62 - Marking Codes for resistors and capacitors
- IEC 63 - Preferred number series for resistors and capacitors
- IEC 68 - Basic environmental testing procedures for electronic components and electronic equipment. (See CECC 00006, 1973)
- IEC 410 - Sampling procedures and tables for inspection by attributes for electronic components of assessed quality. (See CECC 00007, 1978)
- CECC 00 006 - Basic specification : Environmental test procedures (1973).
- CECC 00 007 - Basic specification : Sampling plans and procedures for inspection by attributes (1978)
- CECC 00 200 - Qualified Products List
- CECC 41 000 - (1976) Generic specification for potentiometers
- CECC 41 100 - (1978) Sectional specification for lead-screw actuated and rotary preset potentiometers.

4. ORDERING INFORMATION

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

- Resistance value and tolerance
- Number of the detail specification and style reference
- Dimension 'F', if different to that prescribed (See Notes in A.3 of Appendix A)

5. CERTIFIED TEST RECORDS

Not required.

6. DELAYED DELIVERY

The provisions of 3.6 of 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. ADDITIONAL INFORMATION (Not for inspection purposes)

7.1 Resistance law

The resistance law of potentiometers covered by this detail specification approximates to that for a linear law as given in Figure 3 of CECC 41 000.

7.2 Limiting conditions

The limiting conditions for voltage and current as a function of resistance for linear law potentiometers at a temperature of 70°C are given in Table 3.

8. INSPECTION REQUIREMENTS

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

8.2 When it is desired to obtain qualification approval by adopting the fixed sample size procedure, use shall be made of the test schedule given for that purpose in CECC 41 100.

The conditions of test and the performance requirements shall be identical to those prescribed for quality conformance inspection in this specification.

8.3 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).

(See Notes 1 and 2)

TABLE 4

Clause Number and Test	Conditions of Test	IL	AQL	Performance Requirements						
GROUP A INSPECTION										
To be conducted on a sampling basis, lot-by-lot										
Sub-Group A1 (Non-destructive)		II	4,0%	As in 4.3.1						
4.3.1	Visual inspection									
Sub-Group A2 (Non-destructive)		II	1,0%	As in 4.3.2 As in 4.5.1						
4.3.2	Marking									
4.5	Element resistance									
Sub-Group A3 (Non-destructive)		S-2	4,0%	As specified in Appendix 'A'						
4.3.3	Dimensions (gauging)									
Sub-Group A4 (Non-destructive)		S-3	1,0%	<table border="1"><tr><th>R</th><th>Terminal resistance</th></tr><tr><td>≤ 100Ω</td><td>≤ 3Ω</td></tr><tr><td>> 100Ω</td><td>≤ 3ZR</td></tr></table> As in 4.4 (See Table 2) As in 4.12.5 > 70% of total mechanical travel	R	Terminal resistance	≤ 100Ω	≤ 3Ω	> 100Ω	≤ 3ZR
R	Terminal resistance									
≤ 100Ω	≤ 3Ω									
> 100Ω	≤ 3ZR									
4.6	Terminal resistance	Resistance <u>a</u> to <u>b</u> and Resistance <u>b</u> to <u>c</u>								
4.4	Continuity	(See Note 4)								
4.15	Rotational noise	Method B								
4.12	Voltage proof	Normal air pressure (See D1.1)								
4.8	Mechanical and electrical travel	(See C1.1, C1.2 and Note 8) Effective operating turns.								
GROUP B INSPECTION										
To be conducted on a sampling basis, lot-by-lot										
Sub-Group B1 (Destructive)		S-2	1,5%	≤ 35 mN.m						
4.16	Starting torque	See C1.3								

(See Notes 1 and 2)

TABLE 4

Clause Number and Test	Conditions of Test	IL	AQL	Performance Requirements
4.22.3 Container sealing	Temperature : 85°C to 90°C			As in 4.22.3
<u>Sub-Group B2 (Non-destructive)</u>		S-2	1,5%	The terminations shall be examined for good tinning as evidence by free flowing of the solder with wetting of the terminations
4.23.1 Soldering - solderability	Solder bath method : Temperature : 230 ± 10°C Duration : 2 ± 0,5 s			

(See Notes 1 and 3)

TABLE 4

Clause Number and Test	Conditions of Test	Sample size & criterion of acceptability			Performance Requirements																				
		p	n	c																					
GROUP C INSPECTION																									
To be conducted on a sampling basis, at the periodicity given in column 'P'																									
Sub-Group C1 (Non-destructive)		3	8	1	<table><tr><td>Code</td><td>-55/ 20</td><td>20/ 70</td><td>20/ 125</td></tr><tr><td colspan="4">AR: $\leq \pm \dots$ TR</td></tr><tr><td>K</td><td>0,75</td><td>0,50</td><td>1,05</td></tr><tr><td>L</td><td>1,15</td><td>0,75</td><td>1,60</td></tr><tr><td>V</td><td>1,90</td><td>1,25</td><td>2,65</td></tr></table>	Code	-55/ 20	20/ 70	20/ 125	AR: $\leq \pm \dots$ TR				K	0,75	0,50	1,05	L	1,15	0,75	1,60	V	1,90	1,25	2,65
Code	-55/ 20	20/ 70	20/ 125																						
AR: $\leq \pm \dots$ TR																									
K	0,75	0,50	1,05																						
L	1,15	0,75	1,60																						
V	1,90	1,25	2,65																						
4.14	Temperature character- istic of resistance	LCT : -55°C UCT : +125°C																							
4.19	Locking torque	Not applicable																							
4.18	End-stop torque	For types fitted with slipping clutches (See C1.3) As in 4.18.2			As in 4.18.2																				
4.20	Thrust and pull on spindle	Only the thrust (5N) shall be applied during these tests. The pull is not applicable. <u>a) Half the specimens</u> As specified in 4.20.2 Continuity <u>b) Remaining specimens</u> As specified in 4.20.3			As in 4.20.2 $\Delta \frac{V_{ab}}{V_{ac}} : \leq 1\%$																				
Sub-Group C2 (Destructive)		3	13	2																					
<u>7 specimens</u>																									
4.21	Robustness of terminations	Test Ua - Tensile Force : 10N Visual examination Element resistance			As in 4.21.8 AR: $\leq \pm (1\%R + 0.05\Omega)$																				
4.23.2	Soldering- Resistance to heat	Test Tb of IEC 68-2-20A for potentiometers suitable for printed wiring applications:																							