PERFORMANCE SPECIFICATION SHEET

CIRCUIT BREAKERS, MAGNETIC, PANEL SEAL, TRIP-FREE, SERIES TRIP, DOUBLE POLE (0.2 TO 30 AMPERES)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-PRF-55629.

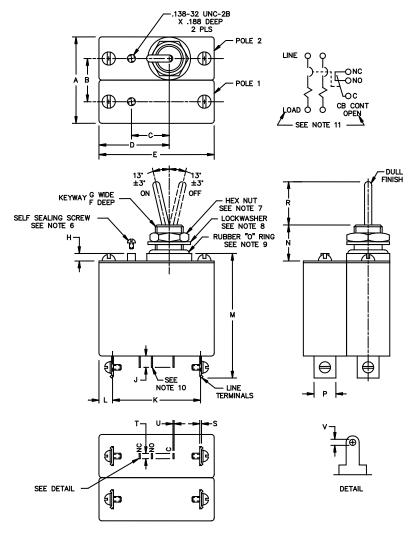


FIGURE 1. <u>Dimensions and configurations (configuration1)</u>.

AMSC N/A FSC 5925

	Incl	hes	mm			
Ltr	Min	Max	Min	Max		
Α		1.515		38.48		
В	.735	.765	18.67	19.43		
С	.641	.671	16.28	17.04		
D	1.189	1.251	30.20	31.78		
Е	1.969	2.031	50.01	51.59		
F	.060	.065	1.52	1.65		
G	.030	.035	0.76	0.89		
Н	.115	.145	2.92	3.68		
J	.312 REF	.374 REF	7.92 REF	9.50 REF		
K	1.499	1.561	38.07	39.65		
L	.199	.261	5.05	6.63		
М		2.232		56.69		
N	.594	.656	15.09	16.66		
Р	.365	.395	9.27	10.03		
R	.719	.781	18.26	19.84		
S	.030	.035	0.76	0.89		
Т	.079 REF	.141 REF	2.01 REF	3.58 REF		
U	.019 REF	.021 REF	0.48 REF	0.53 REF		
V	.019 REF	.081 REF	0.48 REF	2.06 REF		

NOTES:

- 1. Dimensions are in inches.
- 2. Metric equivalents are given for general information only.
- 3. Unless otherwise specified, tolerance is $\pm .031$ (0.79 mm).
- 4. Lockwasher, split, No. 8 NASM35338-137 or equivalent.
- 5 Terminal screw, No. 8, .164-32 UNC-2A, .187 \pm .015 long, material: Brass, tin plated (ASTM B545 or equivalent).
- 6. Passivated corrosion resisting steel screw, slotted head with integral O-ring, may be replaced by the NASM3212-12 with cross-recessed head or equivalent.
- 7. Hex mounting nut .500 32 UNF-2B thread, .625 \pm .010 across flats, .120/.125 thick, brass nickel plated, SAE-AMS-QQ-N-290 nonglare or equivalent; may be replaced with MS25082-B22 or equivalent.
- 8. Internal tooth lockwasher, .625 \pm .005 O.D., .510 \pm .005 I.D., .028 \pm .005 thick, stainless steel.
- 9. O-ring, material: Material shall be selected to enable the O-ring to meet the performance requirements of this specification. Butadiene acrylonitrite has been successfully used in the past and should be considered for meeting the O-ring requirements of the specification.
- 10. Auxiliary switch terminals shall provide for soldered connections.
- 11. Physical item marking of the words "LOAD" and "CB CONT OPEN" is optional.

FIGURE 1. Dimensions and configurations (configuration 1) - Continued.

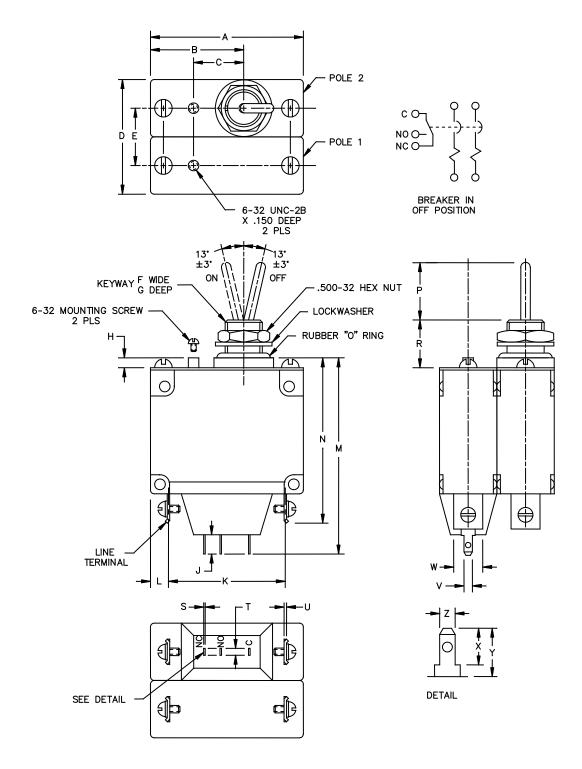


FIGURE 2. Dimensions and configurations (configuration 2).

	Inc	hes	mm				
Ltr	Min	Max	Min	Max			
Α	1.985	2.015	50.42	51.18			
В	1.205	1.235	30.61	31.37			
С	.641	.671	16.28	17.04			
D		1.515		38.48			
Е	.735	.765	18.67	19.43			
F	.060	.065	1.52	1.65			
G	.030	.035	0.76	0.89			
Н	.115	.145	2.92	3.68			
J	.280	.310	7.11	7.87			
K	1.515	1.545	38.48	39.24			
L	.215	.245	5.46	6.22			
M		2.620		66.55			
Ν		2.256		57.30			
Р	.735	.765	18.67	19.43			
R	.610	.640	15.50	16.26			
S	.019 REF	.021 REF	0.48 REF	0.53 REF			
Т	.095 REF	.125 REF	2.41 REF	3.18 REF			
U	.030	.033	0.76	0.84			
V	.095	.125	2.41	3.18			
W	.360	.390	9.14	9.91			
Χ	.245	.275	6.22	6.99			
Υ	.329	.359	8.36	9.12			
Z	.095	.125	2.41	3.18			

NOTES:

- 1. Dimensions are in inches.
- 2. Metric equivalents are given for general information only.
- 3. Unless otherwise specified, tolerance is \pm .015 (0.38 mm).
- 4. Lockwasher, split, No. 8 NASM35338-137 or equivalent.
- 5 Terminal screw, No. 8, .164-32UNC-2A, .187 ±.015 long, material: Brass, tin plated (ASTM B545 or equivalent).
- 6. Passivated corrosion resisting steel screw slotted head with integral O-ring, may be replaced by The NASM3212-12 with cross-recessed head or equivalent.
- Hex mounting nut: .500 32 UNF-2B thread, .625 ±..010 across flats, .120/.125 thick, brass nickel plated, SAE-AMS-QQ-N-290 nonglare or equivalent; may be replaced with MS25082-B22 or equivalent.
- 8. Internal tooth lockwasher, $.625 \pm .005$ O.D., $.510 \pm .005$ I.D., $.028 \pm .005$ thick, stainless steel.
- 9. O-ring, material: Material shall be selected to enable the O-ring to meet the performance requirements of this specification. Butadiene acrylonitrite has been successfully used in the past and should be considered for meeting the O-ring requirements of the specification.
- 10. Auxiliary switch terminals shall provide for soldered connections.
- 11. Physical item marking of the words "LOAD" and "CB CONT OPEN" is optional.

REQUIREMENTS

Dimensions and configuration: See figure 1 and figure 2.

Current ratings: See table I.

High inrush: Applies unless otherwise specified. 1/

Voltage ratings: See table II. Ratings are maximum; the minimum operating voltage is limited by the internal resistance or impedance of the circuit breaker (see table I).

Auxiliary contacts:

Contact capacity shall be 10 amperes to 250 volts 60/400 Hz and 2 amperes resistive, 1 ampere inductive to 50 V dc.

Tripping-time delays: See table I and table II.

Terminal and mounting hardware: See figure 1.

Terminals: See figure 1. Solderability is applicable to auxiliary contact terminals.

Actuator strength: 25 pounds.

Actuator operating force: 4 pounds, maximum.

Terminal strength:

Applied load: 30 pounds.

Applied torque: 10 inch-pounds.

Interrupting capacities:

2,000 amperes at 50 V dc.

2,000 amperes at 120 V ac, 60 Hz.

1,500 amperes at 120 V ac, 400 Hz.

1,000 amperes at 240 V ac, 60 and 400 Hz.

Seal: Panel seal test applies.

Part or Identifying Number (PIN): The PIN to be cataloged and stocked by the Government consists of the prefix M55629/21 and four succeeding code letters as follows: 1/, 2/

	<u>For</u>	pole identificat	ion, see figure 1
		Pole 1	Pole 2
	M55629/21	Ę Ķ	<u> </u>
Two pole circuit breaker with panel seal,and auxiliary contacts.			
Current rating code, see table I. 3/ {			
Voltage, frequency, and time delay {			

When circuit breakers without auxiliary contacts, are installed in new equipment, replacement spares should possess this feature since it is more economical for the DoD to stock one version of this item instead of two. Therefore, stock numbers should not be requested (or assigned) for this special PIN.

^{2/} Replace slash with D for items requiring configuration 2 (M55629D21XXXX). Replace slash with E for items requiring configuration 2 without auxiliary contacts (M55629E21XXXX). Replace slash with F for items requiring configuration 2 without the high-inrush feature (M55629F21XXXX). Replace slash with G for items requiring configuration 2 without the high-inrush feature or auxiliary contacts (M55629G21XXXX).

^{3/} If both poles have identical ratings, code letters will repeat for each pole. If both poles are not identical, poles 1 and 2, respectively (see figure 1) shall be coded in ascending order of the current rating code letter. If both poles have identical current ratings but different voltage, frequency, and time delay code letters, then these code letters shall be coded in ascending order.

TABLE I. Circuit breaker dash numbers and applicable characteristics (configuration 1).

Current r	ating	Voltage	Resistance	Current r	ating	Voltage	Resistance
Amperes	Code	frequency	or	Amperes	Code	frequency	or
	letter	and	impedance	-	letter	and	impedance
		tripping	ohms (max)			tripping	ohms (max)
		time delay				time delay	
		code letter				code letter	
		from table II				from table II	
0.1	Α	K or L	120 at dc	4.0	K	K or L	.1 at dc
0.1	Α	M or N	120 at 60 Hz	4.0	K	M or N	.1 at 60 Hz
0.1	Α	P, R, or S	350 at 400 Hz	4.0	K	P, R, or S	.3 at 400 Hz
0.250	В	K or L	21 at dc	5.0	L	K or L	.08 at dc
0.250	В	M or N	23 at 60 Hz	5.0	L	M or N	.08 at 60 Hz
0.250	В	P, R, or S	43 at 400 Hz	5.0	L	P, R, or S	.15 at 400 Hz
0.35	С	K or L	12 at dc	7.5	М	K or L	.035 at dc
0.35	С	M or N	12 at 60 Hz	7.5	М	M or N	.035 at 60 Hz
0.35	С	P, R, or S	30 at 400 Hz	7.5	М	P, R, or S	.11 at 400 Hz
0.5	D	K or L	6 at dc	10.0	N	K or L	.02 at dc
0.5	D	M or N	6 at 60 Hz	10.0	N	M or N	.02 at 60 Hz
0.5	D	P, R, or S	12 at 400 Hz	10.0	N	P, R, or S	.04 at 400 Hz
0.75	E	K or L	3 at dc	12.5	Р	K or L	.013 at dc
0.75	E	M or N	3 at 60 Hz	12.5	Р	M or N	.015 at 60 Hz
0.75	E	P, R, or S	7 at 400 Hz	12.5	Р	P, R, or S	.03 at 400 Hz
1.0	F	K or L	2 at dc	15.0	R	K or L	.01 at dc
1.0	F	M or N	2 at 60 Hz	15.0	R	M or N	.011 at 60 Hz
1.0	F	P, R, or S	4 at 400 Hz	15.0	R	P, R, or S	.02 at 400 Hz
1.75	G	K or L	0.9 at dc	20.0	S S S	K or L	.007 at dc
1.75	G	M or N	0.9 at 60 Hz	20.0	S	M or N	.007 at 60 Hz
1.75	G	P, R, or S	2 at 400 Hz	20.0		P, R, or S	.01 at 400 Hz
2.5	Н	K or L	.35 at dc	25.0	T	K or L	.006 at dc
2.5	Н	M or N	.35 at 60 Hz	25.0	T	M or N	.006 at 60 Hz
2.5	Н	P, R, or S	.6 at 400 Hz	25.0	Т	P, R, or S	.007 at 400 Hz
3.0	J	K or L	.3 at dc	30.0	U	K or L	.005 at dc
3.0	J	M or N	.3 at 60 Hz	30.0	U	M or N	.005 at 60 Hz
3.0	J	P, R, or S	.5 at 400 Hz	30.0	U	P, R, or S	.006 at 400 Hz

TABLE II. Circuit breaker dash numbers and applicable characteristics (configuration 2).

Current r	ating	Voltage	Resistance	Current r	ating	Voltage	Resistance	
Amperes	Code	frequency	or	Amperes	Code	frequency	or	
	letter	and	impedance		letter	and	impedance	
		tripping	ohms (max)			tripping	ohms (max)	
		time delay	,			time delay	, ,	
		code letter				code letter		
		from table II				from table II		
0.1	Α	K or L	186 at dc	4.0	K	K or L	0.113 at dc	
0.1	Α	M or N	142 at 60 Hz	4.0	K	M or N	0.1 at 60 Hz	
0.1	Α	P, R, or S	350 at 400 Hz	4.0	K	P, R, or S	0.3 at 400 Hz	
0.250	В	K or L	26.4 at dc	5.0	L	K or L	0.08 at dc	
0.250	В	M or N	26.4 at 60 Hz	5.0	L	M or N	0.08 at 60 Hz	
0.250	В	P, R, or S	60 at 400 Hz	5.0	L	P, R, or S	0.175 at 400 Hz	
0.35	С	K or L	13.2 at dc	7.5	М	K or L	0.035 at dc	
0.35	С	M or N	13.2 at 60 Hz	7.5	М	M or N	0.035 at 60 Hz	
0.35	С	P, R, or S	30 at 400 Hz	7.5	М	P, R, or S	0.11 at 400 Hz	
0.5	D	K or L	6 at dc	10.0	N	K or L	0.02 at dc	
0.5	D	M or N	6.36 at 60 Hz	10.0	N	M or N	0.02 at 60 Hz	
0.5	D	P, R, or S	12 at 400 Hz	10.0	N	P, R, or S	0.04 at 400 Hz	
0.75	Е	K or L	3 at dc	12.5	Р	K or L	0.016 at dc	
0.75	E	M or N	3 at 60 Hz	12.5	Р	M or N	0.015 at 60 Hz	
0.75	Е	P, R, or S	7 at 400 Hz	12.5	Р	P, R, or S	0.03 at 400 Hz	
1.0	F	K or L	2 at dc	15.0	R	K or L	0.012 at dc	
1.0	F	M or N	2 at 60 Hz	15.0	R	M or N	0.011 at 60 Hz	
1.0	F	P, R, or S	4 at 400 Hz	15.0	R	P, R, or S	0.02 at 400 Hz	
1.75	G	K or L	0.9 at dc	20.0	S	K or L	0.007 at dc	
1.75	G	M or N	0.9 at 60 Hz	20.0	S	M or N	0.007 at 60 Hz	
1.75	G	P, R, or S	2 at 400 Hz	20.0	S	P, R, or S	0.01 at 400 Hz	
2.5	Н	K or L	0.35 at dc	25.0	Т	K or L	0.006 at dc	
2.5	Н	M or N	0.35 at 60 Hz	25.0	Т	M or N	0.006 at 60 Hz	
2.5	Н	P, R, or S	0.7 at 400 Hz	25.0	Т	P, R, or S	0.009 at 400 Hz	
3.0	J	K or L	0.3 at dc	30.0	U	K or L	0.005 at dc	
3.0	J	M or N	0.3 at 60 Hz	30.0	U	M or N	0.005 at 60 Hz	
3.0	J	P, R, or S	0.5 at 400 Hz	30.0	U	P, R, or S	0.006 at 400 Hz	

TABLE III. Operating voltage, frequency, and tripping-time delay delay (configuration 1). 1/

Time	Tripping-time delay at 25°C ±2°C (tripping time in seconds)												
delay		50 \	√ dc			240 V a	ac, 60 Hz	240 V ac, 400					
percent	ŀ	(I	_	ı	M	I	V		P		R	
rated current	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	N	
	no	no trip no trip		no	trip	no	trip	no	trip	no	no trip		
100	one	one hour one hour		one hour one hour		one hour		one hour					
125	100	10	12	.5	120	10	18	1	N/A	N/A	N/A	N	
150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	60	6	5.8	.6	
200	20	2.5	1.5	.13	20	3	1.6	.16	20	2.1	2	.2	
400	2	.36	.29	.031	2.3	.3	.3	.04	4	.4	.35	.0	
600	1	.13	.15	Inst	.1	.13	.17	Inst	.6	Inst	.125	Ir	
800	.6	Inst	.06	Inst	.6	Inst	.09	Inst	.06	Inst	.05	Ir	
1,000	.29	Inst	.05	Inst	.29	Inst	.043	Inst	.045	Inst	.036	Ir	
1,800 <u>2</u> /	no	trip	no	trip	no trip		no trip		no trip		no trip		

See footnotes at end of table IV.

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TABLE IV. Operating voltage, frequency, and tripping-time delay (configuration 1) - Continued. 1/

Time		Tripping-time delay at high and low temperature °C (tripping time in seconds) <u>3</u> /											
delay		50 \	/ dc			240 V a	c, 60 Hz		240 V ac, 400 Hz				
percent													
rated	ŀ	(l	_	N	Л	1	N	Р		R		
current	-40°	+85°	-40°	+85°	-40°	+85°	-40°	+85°	-40°	+85°	-40°	+85°	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
	no	no trip no trip		no	no trip no trip			no trip no trip			trip		
100	one	hour	one	hour	one hour		one	one hour		one hour		one hour	
125	500	.5	100	.1	500	1	100	.1	N/A	N/A	N/A	N/A	
150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	500	.5	100	.1	
200	100	.1	10	.05	100	.05	10	.05	100	.1	10	.05	
400	20	Inst	3	Inst	20	Inst	3	Inst	20	Inst	3	Inst	
600	5	Inst	1	Inst	5	Inst	1	Inst	5	Inst	1	Inst	
800	2	Inst	.5	Inst	.5	Inst	.5	Inst	.5	Inst	.5	Inst	

^{1/} Circuit breakers shall not trip at 100 percent rated current but must trip at 125 or 150 percent of rated current. Between 1 125 or 150 percent, they may trip. Instantaneous is defined as less than 15 milliseconds.

^{2/} Items without the high-inrush feature (for use in production only) are not subject to this requirement. High-inrush test sha using one alternation which has a peak value of 1800 percent of rated current. 400 Hz and dc delays shall be subjected to a 60 Hz waveform.

³/ High and low test temperature tolerances are ± 2 °C.

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TABLE V. Operating voltage, frequency, and tripping-time delay (configuration 2). 1/

		Tripping-time delay at 25°C ±2°C (tripping time in seconds)											
Time		50 V	dc			240 V a	c, 60 Hz	240 V ac, 400 Hz					
delay													
percent													
rated	K		L	=	M	-	N		Р		R	2	
current	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
	no t	rip	no trip		no trip no trip		no trip		no trip				
100	one h	nour	one	hour	one hour		one h	one hour		one hour		one hour	
125	60	7	6.5	0.5	120	10	12	0.7	N/A	N/A	N/A	N/A	Ν
150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	70	5	8	0.5	4
200	10	0.6	1.2	0.13	20	2.2	3	0.13	25	2.1	1.9	0.15	1
400	2	0.15	0.5	0.031	3	0.3	1	0.03	5	0.4	0.4	0.02	
600	1	Inst	0.25	Inst	2	Inst	0.3	Inst	2.4	Inst	0.25	Inst	
800	0.5	Inst	0.1	Inst	0.8	Inst	0.15	Inst	1	Inst	0.1	Inst	
1,000	0.1	Inst	Inst	Inst	0.25	Inst	0.1	Inst	0.1	Inst	0.05	Inst	
1,800 <u>2</u> /	no t	rip	no	trip	no t	rip	no trip		no trip		no trip		

See footnotes at end of table VI.

TABLE VI. Operating voltage, frequency, and tripping-time delay (configuration 2) - Continued. $\underline{1}$ /

		Tripping-time delay at high and low temperature °C (tripping time in seconds) 3/											
Time		50 V dc				240 V a	c, 60 Hz			240 V ac, 400 Hz			
delay		<		L	N	Λ		N	Р		R		
percent rated current	-40°C Max	+85°C Min	-40°C Max	+85°C Min	-40°C Max	+85°C Min	-40°C Max	+85°C Min	-40°C Max	+85°C Min	-40°C Max	+85°C Min	
	no	trip	no trip		no trip no trip		no trip		no trip				
100	one	hour	one	hour	one hour		one hour		one hour		one hour		
125	500	5	100	0.1	700	1	100	0.1	N/A	N/A	N/A	N/A	
150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	600	0.5	100	0.1	
200	100	0.1	10	0.05	160	0.05	10	0.05	130	0.1	10	0.05	
400	20	Inst	3	Inst	26	Inst	3	Inst	32	Inst	3	Inst	
600	5	Inst	1	Inst	13	Inst	1	Inst	26	Inst	1	Inst	
800	2	Inst	0.5	Inst	2.8	Inst	0.5	Inst	8.4	Inst	0.5	Inst	

^{1/} Circuit breakers shall not trip at 100 percent rated current but must trip at 125 or 150 percent of rated current. Between 1 percent and 125 or 150 percent, they may trip. Instantaneous is defined as less than 15 milliseconds.
2/ High-inrush test shall be performed using one alternation, which has a peak value of 1800 percent of rated current. 400 h

^{2/} High-inrush test shall be performed using one alternation, which has a peak value of 1800 percent of rated current. 400 and dc delays shall be subjected to a 400 Hz waveform, 60 Hz delays shall be subjected to a 60 Hz waveform.

^{3/} High and low test temperature tolerances are ±2 degree Celsius.

Circuit breakers covered by this specification replace commercial types as specified in table III providing they have equivalent current, voltage, frequency, and time delay ratings.

Circuit breakers without either auxiliary contacts or the high-inrush feature should be replaced by equivalently rated military items with both of these features.

TABLE VII. Supersession and substitution data.

Superseding military PIN	Superseded manufacturers PIN				
	CAGE 81541				
M55629/21XXXX	Type APGN-66				
	UPGN-66				
	IEGN-66				

Reference documents. In addition to MIL-PRF-55629, this document references the following:

ASTM-B545 MS25082 NASM3212 NASM35338

SAE-AMS-QQ-N-290

The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

Army - CR Navy - EC

Air Force - 85 DLA - CC

Review activities:

Army - AV, CR4, MI Navy - AS, MC, OS, SH Air Force - 19, 99 Preparing activity: Army - CR

Agent: DLA - CC

(Project 5925-2010-021)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.daps.dla.mil.

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