

NO FUSE CIRCUIT BREAKER CAM SERIES

General Selection Table

SPECIFIC	CATIONS	РНОТО		Champion of the State of the St		Common or choices or choices	SAN (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	Gameson by Makey in the Control of t	CM CM CM CM CM CM CM CM		
Туре			•				S-Type		H-Ty	/pe	
				2-р	ole	CAMF1-S2			CAMF	1-H2	
Type and Po	le			3-р	ole	CAMF1-S3			CAMF	1-H3	
			Ī	4-p	ole	CAMF1-S4			CAMF	1-H4	
Rated currer	nt, In			Δ.	A	16、20、25、32、40、50、63、80、10			100、125		
Adjustable n	Adjustable part				e current 8ln~1.0ln)		√		✓	,	
Aujustable p	oai t			Lockup d operating			Х		X		
Rated opera	tional volta	age, Ue		AC	(V)		2	230、400	、440		
Rated insula	tion voltag	je, Ui		V	/			750\	/		
Rated impuls	se withstar	nd voltage,	Uimp	K	V			8			
Standard	ard						1	EC/EN 60	0947-2		
Rated freque	ency			Н	z			50 / 6	30		
Rated short-	circuit brea	aking capa	city (Icu)	kA							
				230	0V		50kA			κA	
AC				400	0V		25kA		35	κA	
			Ī	440	0V		22kA		25	κA	
lcs=%*lcu							50~100		50~	100	
Mechanical I	ife (circle)					20,00	00/8,500 (A	s defined	by IEC/EN	60947-2)	
Electrical life	(circle)					4,00	00/1,500(A	s defined	by IEC/EN	60947-2)	
Extra Acce	essories					•					
Pole Left hole p								t hole po	position		
	AX	AL	SHT	AX+AX	AX+AL	AX	AL	SHT	AX+AX	AX+AL	
2P 3P	-	-	-	-	-	√	√	√ 	/	√	
3P 4P	✓ ✓	√ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	√ √	√ √	✓ ✓	√ √	
וד	V	l v		v	ı v	v	ı v	v	l v		

Ambient Temperature: Within the range of -5°C~+55°C (However, when the temperature exceed 40°C, it

should be considered to reduce the capacity to use.)

Relative Humidity: Within the range of 45~85%

Altitude: 2,000m or less (However, if it exceeds 1,000m, atmosphere correction through

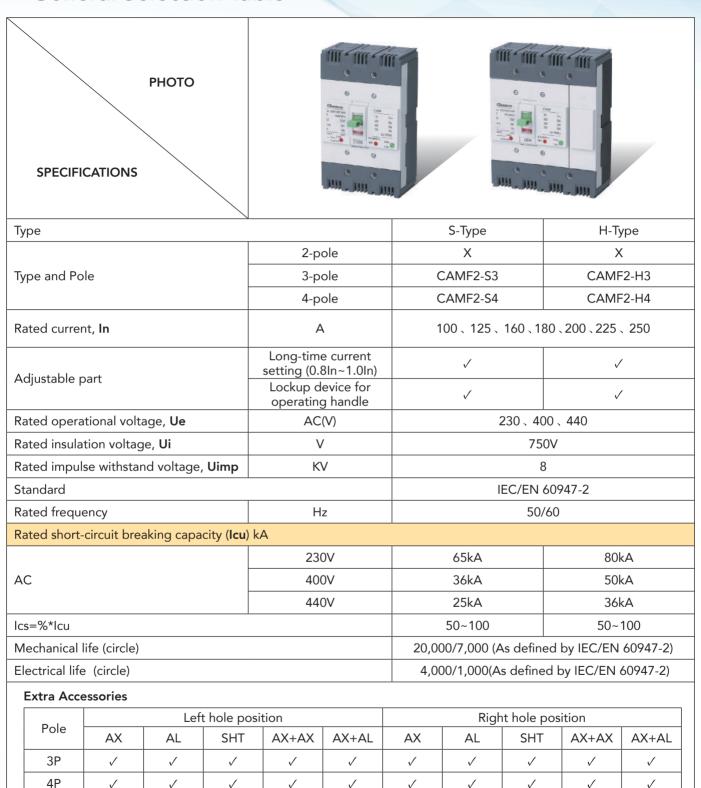
humidity test and withstand voltage test can be considered.)

Atmosphere where excessive steam, oil steam, smoke, dust, salt and other corrosive materials do not exist.



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EARTH LEAKAGE CIRCUIT BREAKER CAE SERIES

General Selection Table

PHOTO SPECIFICATIONS						Commerces	$G_{n}^{2} = -\frac{n}{2} \frac{1}{2} (n^{2})^{2}$	125a		Control Contro	MA SA
Туре					S-Type					Н-Туре	
Type and Po	le					oole F1-S2	3-pole	4-pole CAEF1-S4	2-pole CAEF1-H2	3-pole CAEF1-H3	4-pole CAEF1-H4
Protective fu	ınction								ircuit & Gro		
Rated current, In A						1			50 \ 63 \ 80		5
Rated residual current Operating, $I\Delta n(mA)$ (Non-operating, $I\Delta no(mA)$)						 30 mA - 300mA - 500 mA Selectable (15 mA - 150mA - 250 mA) 100 mA - 300mA - 500 mA Selectable (50 mA - 150mA - 250 mA) 					ole
Long-time current setting (0.8ln~1.0ln)							✓			✓	
Lockup devi	Lockup device for operating handle					(√	√	Х	/	/
Rated operat	tional volta	ge, Ue	AC(V	')				230、4	00、440		
Rated insula	tion voltage	e, Ui	V					75	50V		
Rated impulse w	vithstand volta	ge, Uimp	KV		8						
Residual curr	ent off-time	e at l ∆n	Sec		0.1 \ 0.3 \ 0.5 \ 0.1-0.3-0.5 Selectable \ 0.1 \ 0.3 \ 0.5 \ 0.1-0.3-0.5 Selectable						5 Selectable
Standard								IEC / EN	60947-2		
Rated freque	ency		Hz					50	/ 60		
Rated short-		king cap	acity (Icu) k	:A							
				230V			50)kA		65kA	
AC				400V			25	ikA		35kA	
				440V			22	2kA		25kA	
lcs=%*lcu							50~	100		50~100	
Mechanical I	ife (circle)						20,000) / 8,500 (A	s defined by	y IEC/EN 60)947-2)
Electrical life	(circle)						4,000) / 1,500(As	defined by	IEC/EN 60	947-2)
Extra Acce	essories								<u> </u>		
		Lef	t hole posi	tion				Rig	ht hole pos	ition	
Pole	AX	AL	SHT	AX+	AX	AX+Al	L AX	AL	SHT	AX+AX	AX+AL
2P			-	-			_	-	-	-	_
3P	/	✓	√	/		√	-	-	-	-	-
4P	✓	✓	√	/		√	✓	-	-	-	-
		.									

Ambient Temperature: Within the range of $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$ (However, the average for the duration of 24 hours must not exceed 35°C.)

Altitude: 2,000m or less.

Installation class:

The magnetic field near the installation site should not be more than five times the earth magnetic field in any direction.

Pollution levels:

EARTH LEAKAGE CIRCUIT BREAKER CAE SERIES

General Selection Table

PHOTO SPECIFICATIONS					Chango Grand State of the Stat	500 mm m		General Principles of the Prin			
Туре						S-Type			Н-Туре	<u> </u>	
Type and Po	le				3-pole CAEF2-S3		oole	3-pole		4-pole	
	Type and tole					l	F2-S4	CAEF2-H		CAEF2-H4	
Protective fu					Overload & Short-circuit & Ground fault						
Rated currer	nt, In		Α				25、160、18				
Rated residu	ial current		ıting, I∆n (ı rating, I ∆ r		 30 mA - 300mA - 500 mA Selectable (15 mA - 150mA - 250 mA) 100 mA - 300mA - 500 mA Selectable (50 mA - 150mA - 250 mA) 						
Long-time co	urrent settir	ng (0.8In~1	1.0ln)			✓			✓		
Lockup devi	ce for opera	ating hand	le		√		✓	✓		√	
Rated opera	tional volta	ge, Ue	AC	(V)			230 、40	00、440			
Rated insula	tion voltage	e, Ui	\	/			75	0V			
Rated impulse v	vithstand volta	ge, Uimp	K	V	8						
Residual curr	ent off-time	e at l ∆n	Se	ec	0.1 - 0.3 -0.5 Selectable						
Standard			_				IEC / EN	60947-2			
Rated freque	ency		Н	z			50 /	[′] 60			
Rated short-	circuit brea	king capac	city (Icu) k	κA							
				230V			5kA		80kA		
AC				400V			6kA		50kA		
				440V	'		5kA		36kA		
lcs=%*lcu							~100		50~10		
Mechanical							0 / 7,000 (4				
Electrical life						4,00	00 / 1,000(A	s defined	by IEC/EN	60947-2)	
Extra Acce											
Pole	Pole Left hole position					A.V.		t hole pos		AV. A1	
3P	AX _/	AL	SHT	AX+AX	_	AX -	AL	SHT	AX+AX	AX+AL	
4P	√ √	√ ✓	<u>√</u>	✓ ✓	✓ ✓		-	-	-	-	
	V	v	v		V	v		-			

Ambient Temperature:	Within the range of -5° C $\sim +40^{\circ}$ C (However, the average for the duration of 24
·	hours must not exceed 35°C.)

Altitude: 2,000m or less.

Installation class:

The magnetic field near the installation site should not be more than five times the earth magnetic field in any direction.

Pollution levels:

EXTRA ACCESSORIES



Shunt trip (SHT)

- The shunt trip is an accessory remote control.
- The shunt will trip when the input voltage is 70% 110% of the rated operational voltage.
- Rated Voltage: 230V, 400V, 440V AC



Auxiliary Switch (AX)

- Auxiliary switch is used to indicate the "On" and "Off" status of the breaker.
- Each switch has two contacts with a common connection.
- One is open and the other closed when the circuit breaker is open, and vice versa.



Alarm switch (AL)

- Alarm switch will make immediate audio or visual indication in a tripped breaker due to overload, short circuit or shunt trip to remind people.
- This switch features a closed contact when the circuit breaker is tripped automatically.
- In other words, this switch does not function when the breaker is operated manually.

Combination switch (AX + AL)

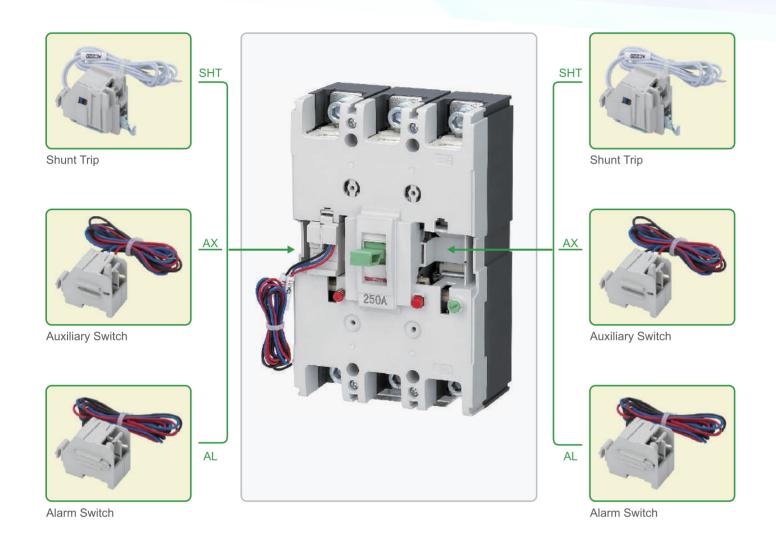
It has one auxiliary switch (AX) and one alarm switch (AL) in a body to connect into the same position of the breaker.

Contact (AX + AL)

MCCB	ON	OFF	TRIP
AX	AXc1 — AXb1	AXc1	O
AL	AXc1——o	○AXa1 ○AXb1	AXc1————————————————————————————————————



EXTRA ACCESSORIES

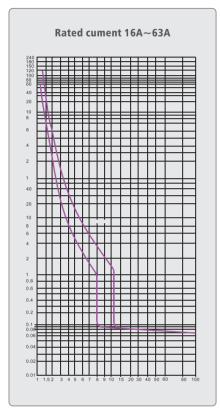


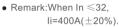


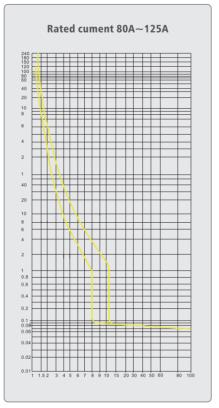
OVERLOAD & SHORT CIRCUIT OPERATING CHARACTERISTICS

- CAM SERIES
- CAE SERIES

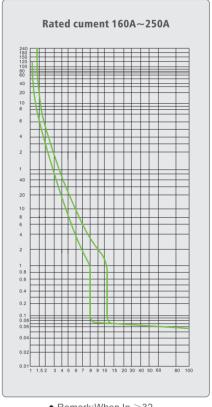
Characteristics Curves







• Remark:When In >32, Ii=10*In(±20%)



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Characteristics Curves Table

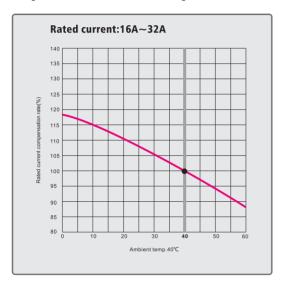
Test No.	Load current	Rated current	Initial state	Time limit to trip	Estimated result	
1.	1.05 ln	In≤63A	cold state	t≤1h	Non tripping	
1.	1.05 111	In>63A	cold state	t≤2h		
2.	1.30 ln	In≤63A	continuing the test	t<1h	Trip	
۷.	1.30 111	In>63A	continuing the test	t<2h	TIIP	
hort circuit						
2	400A*80%	<224	a ald atata	t≤0.2s	Non tripping	
3.	400A*120%	<32A	cold state	t<0.2s	Trip	
4	10 In*80%	> 004		t≤0.2s	Non tripping	
4.	10 In*120%	>32A	cold state	t<0.2s	Trip	

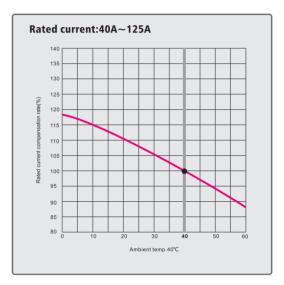


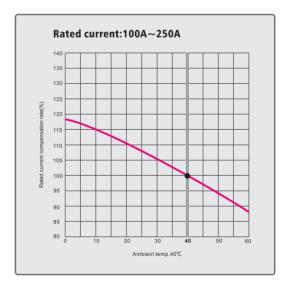
OVERLOAD & SHORT CIRCUIT OPERATING CHARACTERISTICS

- CAM SERIES
- CAE SERIES

• Temperature Compensation Curves







• Temperature Compensation table (IEC/EN 60947-2)

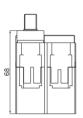
Current range	Compensation Coefficient													
	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
16-32A	1.18	1.17	1.16	1.14	1.12	1.09	1.07	1.05	1.03	1	0.97	0.95	0.92	0.87
40-125A	1.16	1.16	1.15	1.14	1.12	1.10	1.08	1.06	1.03	1	0.97	0.94	0.87	0.82
100-250A	1.14	1.13	1.13	1.12	1.10	1.08	1.07	1.05	1.03	1	0.97	0.93	0.86	0.76

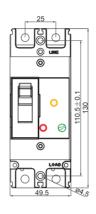


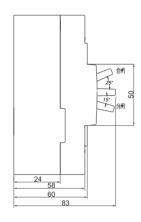
OUTLINE DIMENSIONS

- NO FUSE CIRCUIT BREAKER CAM SERIES
- EARTH LEAKAGE CIRCUIT BREAKER CAE SERIES

CAMF 1 (2P)

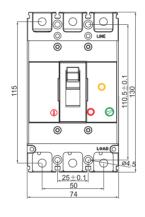


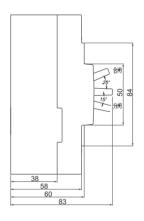




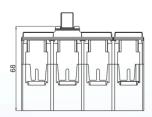
CAMF 1 (3P)

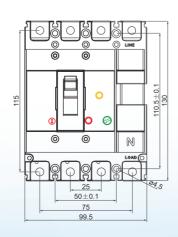


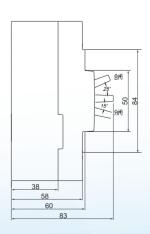




CAMF 1 (4P)





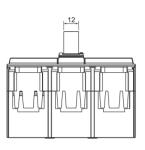


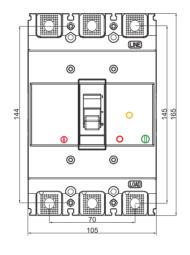


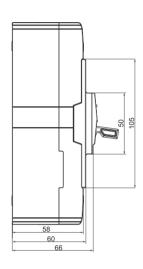
OUTLINE DIMENSIONS

- NO FUSE CIRCUIT BREAKER CAM SERIES
- EARTH LEAKAGE CIRCUIT BREAKER CAE SERIES

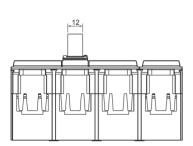
CAMF 2 (3P)

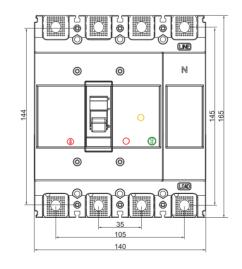


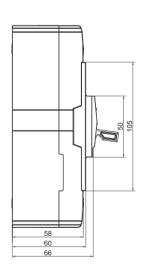




CAMF 2 (4P)









MINI SAFETY BREAKER CAB1 SERIES

General Selection Table

PHOTO		CRINESCO MCB CRISTA SUB-SUB-SUB-SUB-SUB-SUB-SUB-SUB-SUB-SUB-	CAMESCO CAMESCO DE L'AU SENA LAN SENA CAMESCO RECTRIC CO LITE.	CAMSCO RCCB CALLEY SPRINGER 32.A LINE TENA CAMSCO RECTRIC CO. LTD.	
Item No.		CAB1-32G	CAB1L-32G	CAB1L-32	
Protection		Overload & Short Circuit	Overload & Short Circuit & Ground fault	Ground fault	
lated current		C CURVE: 16AD CURVE: 16A	A, 20A, 25A, 32A A, 20A, 25A	16A、20A、25A、32A	
Rated residual current	Operating, I∆n	X	10mA 、15 mA 、	30 mA 、100 mA	
Rated residual current	Non-operating, I∆no	X	5 mA 、7.5 mA 、	15 mA 、50 mA	
Poles			2 Poles		
Rated voltage		230V AC 50/60Hz	110V AC, 230V	V AC 50/60Hz	
Residual current off-ti	me	X	0.1	Sec.	
Standard		IEC/EN 60898	IEC/EN 61009-1	IEC/EN 61008-1	
	Ground fault	X	Electronic	Electronic	
Type of trip	Overload	Thermal / Bimetal 2P2E	Thermal / Bimetal 2P2E	X	
	Short Circuit	Magnetic	Magnetic	Ground fault 16A \ 20A \ 25A \ 32 \ 30 mA \ 100 mA \ \ 15 mA \ 50 mA OV AC 50/60Hz I Sec. IEC/EN 61008-1 Electronic	
Breaking capacity			2,500A		
Endurance	Electrical		2,000 operations		
Endurance	Mechanical		3,000 operations		
Type of operation			AC		
Ambient temperature			-5°C ~ +40°C		
Altitude			2,000m or less		
Installation class			III		
Pollution levels			II		
The magnetic field ne	ar the installation sit	e should not be more thar	n five times the magnetic fi	eld in any direction.	

Extra Plastic Cover

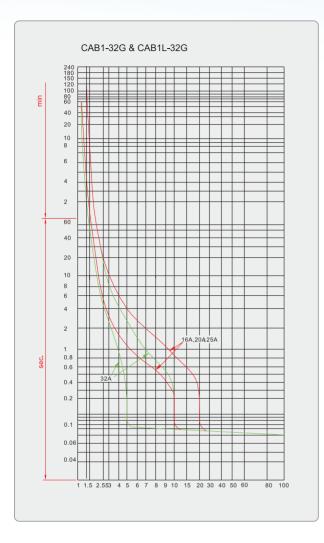






MINI SAFETY BREAKER CAB1 SERIES

Characteristics Curves



Over-load

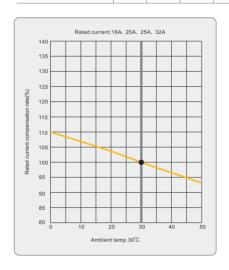
Test No.	Curve type	Load current	Initial state	Time limit to trip	Estimated result
1.	C, D	1.13 In	cold state	t≤1h	Not trip
2.	C, D	1.45 In	continuing the test	t<1h	Trip
3.	C, D	2.55 In	cold state	1s <t<60s< td=""><td>Trip</td></t<60s<>	Trip

Short circuit

	est Io.	Curve type	Load current	Initial state	Time limit to trip	Estimated result
4.	1	С	5 In	cold state	t≤0.1s	Not trip
	4.	D	10 In	cold state	ί≪0.15	Not trip
	_	С	10 In	cold state	t<0.1s	Trip
	5.	D	20 In	cold state	1~0.15	Пр

• Temperature Compensation Curves CAB1-32G & CAB1L-32G

Ambient temperature Rated current(A)	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C
16	19.20	18.40	17.76	16.96	16.00	15.36	14.88	14.24
20	24.00	23.00	22.20	21.20	20.00	19.20	18.60	17.80
25	30.00	28.75	27.75	26.50	25.00	24.00	23.25	22.25
32	38.72	37.12	35.52	33.92	32.00	30.72	29.76	28.16



Dimension

