CEB

Offset MHO-Zone and Phase Packaged Directional-distance Relays

GE Protective Relays

DESCRIPTION

Type ***CEB*** relays are high-speed, single-zone mho directional distance phase relays with provisions for offsetting the characteristic. The transient overreach characteristic is such that these relays are suitable for 2nd or 3rd zone applications.

APPLICATION

The type ***CEB51A*** is a single-phase offset mho blocking relay that includes an out-of-step blocking auxiliary (OSB) telephone type relay. This auxiliary has two NO and five NC contacts suitable for out-of-step blocking of either tripping or reclosing.

One relay per terminal is required to provide out-of-step blocking in conjunction with the M2 unit of a Type CEY52 or GCY51 when the OM3 unit is reversed. It is also suitable for two or three-terminal directional comparison applications that utilize a directional carrier starting relay such as a Type CEB52.

The Type ***CEB51B*** is a single-phase, single-zone relay. Thus, three relays, plus one Type SAM timing relay are required to provide one zone of time delay distance protection against multi-phase faults.

A typical application would include three CEB51B relays with one Type SAM timer for generator backup protection.

The ***CEB52A*** is a three-phase high-speed ***extended (30 to 1) range***, single-zone, mho distance relay with provisions for offsetting the characteristic a fixed amount. It is suitable for applications as a transmission line carrier starting relay in directional comparison relaying schemes. Also, the CEB52A is suitable as a third-zone distance relay in a straight distance protec-tive scheme using zone packaged relays where carrier may be added in the future.

The CEB52A consists of three single-phase offset mho units in one L2D case and has one target seal-in for all three phases. It may also be used with a Type SAM timing relay to provide second- or third-zone protection in straight distance schemes.

CONTACT RATINGS

The trip circuit of the relay will close and carry momentarily 30 amperes dc. The breaker trip circuit, however, should always be opened by a circuit breaker auxiliary switch or other suitable means, because the relay contacts cannot interrupt tripping current. If the tripping current should exceed 30 amperes it is recommended that an auxiliary tripping relay be used.

BURDEN DATA

Table 1

Relay Type	Maximum ① Current Burden		Maximum ① Potential Burden	
	Pf	Va	Pf	Va
CEB52A	0.98	3.86	--	--
Polarizing			0.99	9.2
Restraint			0.57	8
CEB51A	0.7	5	--	--
Polarizing	--	--	0.99	10.3
Restraint	--	--	0.39	7.3
CEB51B	0.7	5	--	--
Polarizing	--	--	0.99	10.3
Restraint	--	--	0.39	7.7

① Maximum Burden imposed on each CT or Pt. at 5 amp 60 Hz and rated voltage and 100 percent restraint tap. For potential Burden calculation other than 100 percent restraint, see instruction book.

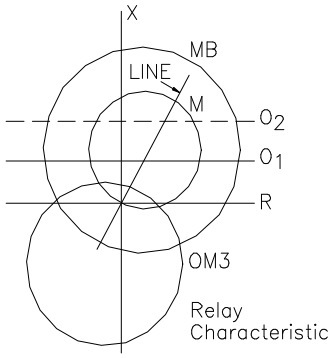

Fig . 1. Typical steady state characteristics for Type GCX51 with starting CEB52A for carrier

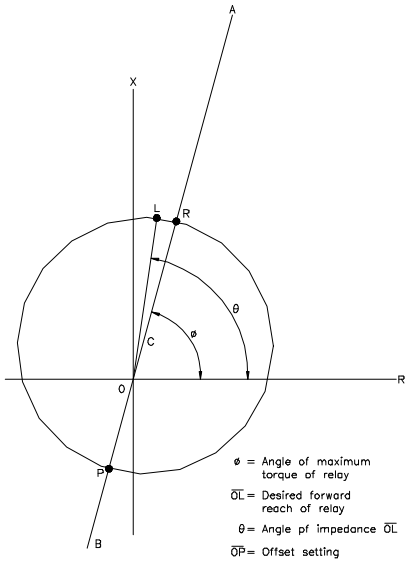

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Fig. 2. Typical offset characteristic of Type CEB51B relay

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SELECTION GUIDE

Application	Ac Rating	Dc Control Volts	Number Of Phases	Target Amp	Target Seal-In Amp	Mho Unit Ohms	Max. Torque Angle Range	Max. Torque Angle Factory Setting	Offset Ohms	Model Number	Case Size	Approx Wt Lb(Kg) Net	Approx Wt Lb(Kg) Ship
Type CEB52A—3 Phase Offset Mho—2nd or 3rd Zone Extended Range													
Lines Directional Comparison and Distance	60 Hz 120V 5 Amp	--	3	--	0.6/2	0.5-15			0/0.25	CEB52A4D	L2D	44(20)	51(23.1)
		--	3	--	0.2/2	0.5-15			0/0.25	CEB52A9D			
		--	3	--	0.6/2	1-30			0/0.5	CEB52A1D			
		--	3	--	0.2/2	1-30			0/0.5	CEB52A2D			
		--	3	--	0.6/2	1-30	60/75	75°	0/0.2	CEB52A6D			
		--	3	--	0.6/2	2-60			0/0.5	CEB52A5D			
		--	3	--	0.6/2	2-60			0/0.1	CEB52A10D			
	50 Hz 120V	--	3	--	0.2/2	1-30	60/75	75°	0/0.5	CEB52A3D			
		--	3	--	0.6/2	1-30	60/75	75°	0/0.5	CEB52A8D			
Type CEB51B—Single Phase Offset Mho—2nd or 3rd Zone													
Generator and Lines	60 Hz 120V 5 Amp	--	1	--	0.2/2	3-30	--	60°	0-4	CEB51B1A	M1	25(11.3)	31(14.1)
		--	1	--	0.2/2	3-30	--	75°	0-4	CEB51B2A			
	60 Hz 120V 5 Amp	--	1	--	0.2/2	3-30	--	75°	0-4	CEB51B3A			
Type CEB51A—Single Phase Offset Mho With OSB Auxiliary													
Out-of-Step Blocking (OSB)	60 Hz 120V 5 Amp	125/250	1	--	--	3-30	--	60°	0-4	CEB51A1A	M2	25(11.3)	31(14.1)
		125/250	1	--	--		--	75°		CEB51A3A			
		24/48	1	--	--		--	60°		CEB51A7A			
		24/48	1	--	--		--	75°		CEB51A6A			
		110/220	1	--	--		--	75°		CEB51A9A			
	60 Hz 120V 5 Amp	125/250	1	--	--	3-30	--	60°	0-4	CEB51A2A			
		125/250	1	--	--		--	75°		CEB51A4A			
		110/220	1	--	--		--	60°		CEB51A8A			
		110/220	1	--	--		--	75°		CEB51A5A			

NOTE: For SAM and other timing relays, see Section 6.

CONNECTION DIAGRAMS

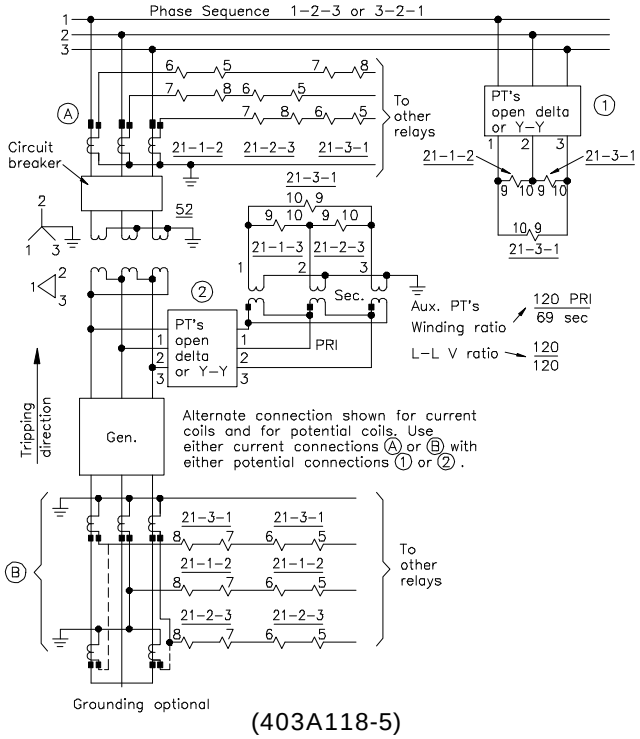

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Fig. 3. Typical external conn. For Type CEB51B for generator back-up protection (3 relays required)

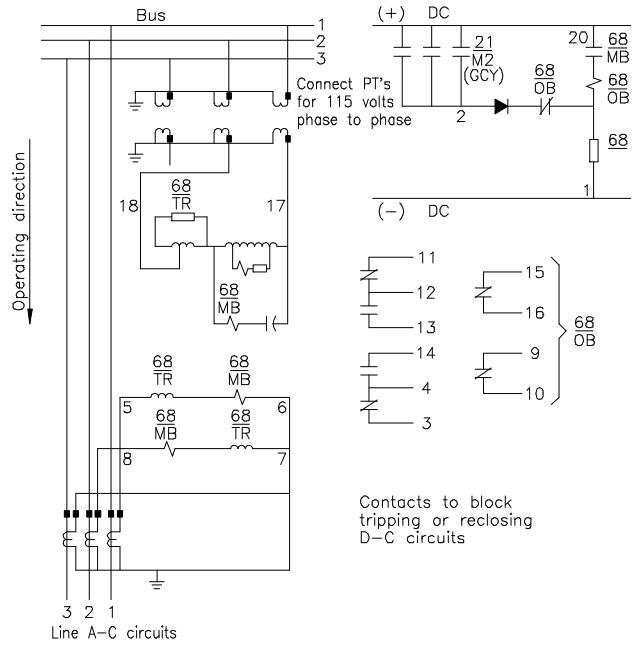

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Fig. 4. Typical external conn. For Type CEB51A relay for out-of-step blocking