CHC

Instantaneous Overcurrent Relay

High-speed instantaneous overcurrent fault detector relays.

Features and Benefits

- Electrically separate contacts available
- Drawout case

Applications

- Three phase and ground fault in circuit breaker failure schemes

Protection and Control

- Three phase O/C
- Ground instantaneous O/C
- Time delay operation

Description

The CHC relays are cup-type, high speed, sensitive, overcurrent fault detector relays. These relays may be set to pick up below full load current and operate continuously in the picked-up position. The cup unit circuits are designed to prevent contact welding.

The CHC11A relay is a complete three-phase and ground, multicontact, high speed nondirectional overcurrent relay. The relay consists of an induction cup unit for multiphase faults and a small hinged armature unit for ground faults. Two targets and four electrically separate contacts are available. Three are normally open with a fourth that is field selectable either normally open or closed. An external reactor is supplied with the relay to reduce dropout time of hinged armature unit when applied in breaker failure schemes. Note that use of the reactor will increase pickup of ground fault unit approximately 40 percent.

The CHC15A consists of two cup units. The top unit is used for ground fault detection, with the bottom unit for phase fault detection. Also included in the relay are two targets and four electrically separate contacts; these are normally open with a fourth contact that is field selectable either normally open or closed.

The CHC21A and CHC21C relays consist of an induction cup unit that is responsive to both phase and ground currents, and a telephone type auxiliary relay that provides four or five electrically separate contact circuits. Two of these contact circuits have targets wired in series. The CHC21A auxiliary relay has three normally open contacts and a fourth contact that is field selectable normally open or closed. The CHC21C has an additional normally open contact.

Application

The CHC11, CHC15, and CHC21 relays may be applied wherever a high-speed fault detector is required. However because it has four or five electrically separate contacts and can be operated continuously in the picked up position, it is particularly well suited for applications as a fault detector in circuit breaker failure schemes. In these schemes, the CHC11, CHC15, and CHC21 relays are used to detect the failed circuit breaker and to select the back up breakers to be tripped in order to isolate the fault.

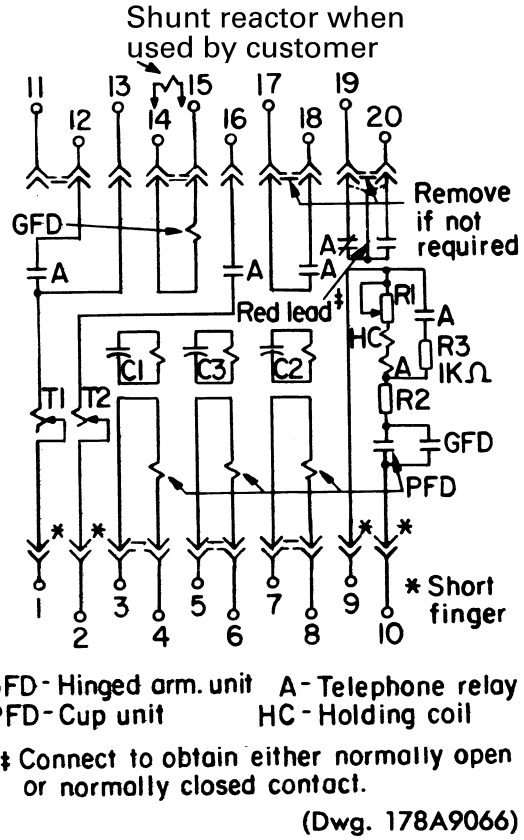
The CHC12 relay is designed as a current fault detector in conjunction with distance relays to prevent tripping of the circuit breaker or operation of the associated timer because of loss of relay potential supply for reasons other than a system fault. This can occur because of (1) short circuits or open circuits involving the potential supply, (2) from switching (with certain configurations of power circuits) or (3) because of the use of line-side potential supply for the relay. In the latter instance the fault detector protects the associated timer against possible burnout when the breaker is open, and avoids false retripping of the breaker at the instant of reclosure.

Ratings

The pickup of the cup units and the hinged armature units are continuously adjustable over their entire range.

The auxiliary telephone relay used in these relays is continuously rated at the nameplate dc voltage for the relay. The contacts can carry three amperes continuously or 30 amperes for two seconds. The current interrupting capabilities are shown in Table I.

Fig. 1. Internal connections for CHC11A, front view



The contacts of the cup unit and the hinged armature unit are capable of interrupting the auxiliary telephone unit current.

Table 1 – Auxiliary Telephone Relay Interrupting Capabilities

Volts (Dc)	Inductive (Amp)	Non-Inductive (Amp)
48	1.0	3
125	0.5	1.5
250	0.25	1.0

Fig. 2. Internal connections for CHC12A, front view

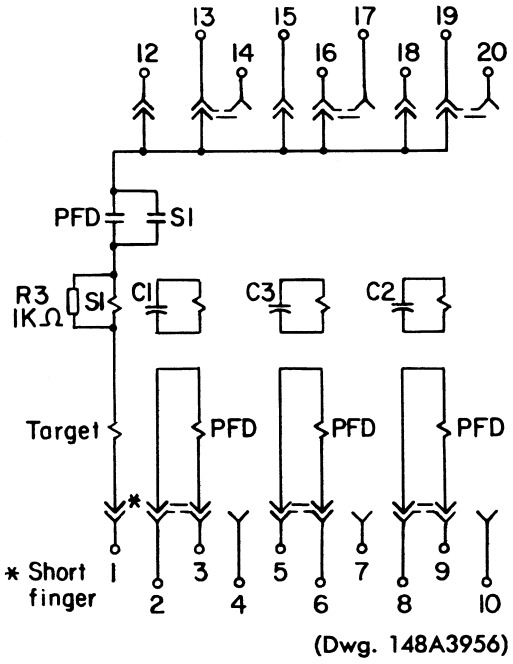


Fig. 3. Internal connections for CHC15A, front view

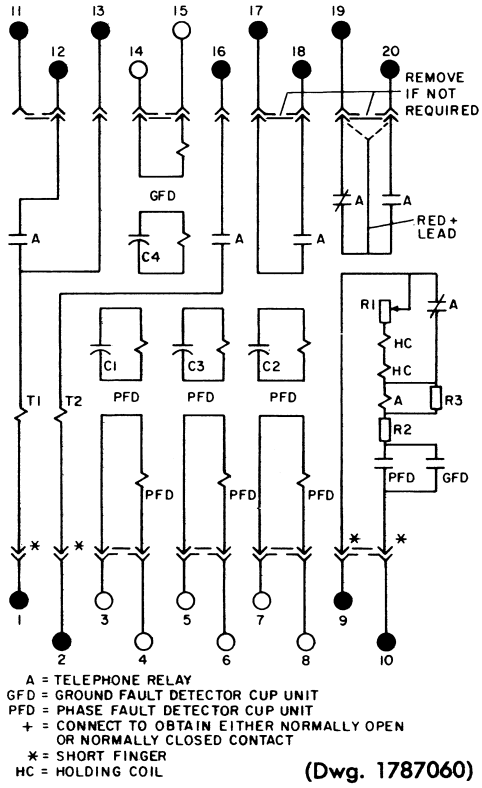


Fig. 4. Internal connections for CHC21A, front view

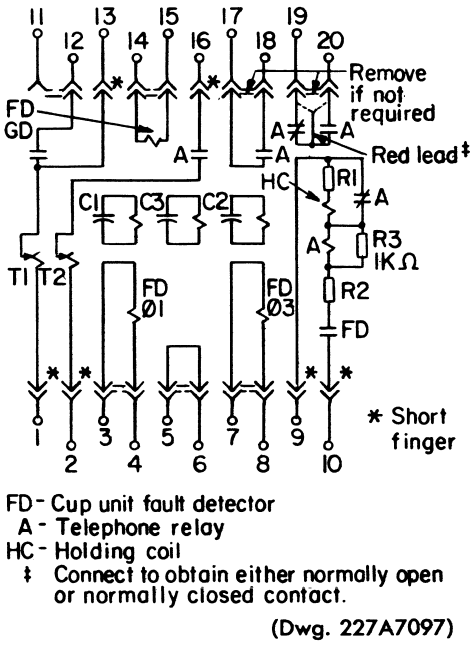
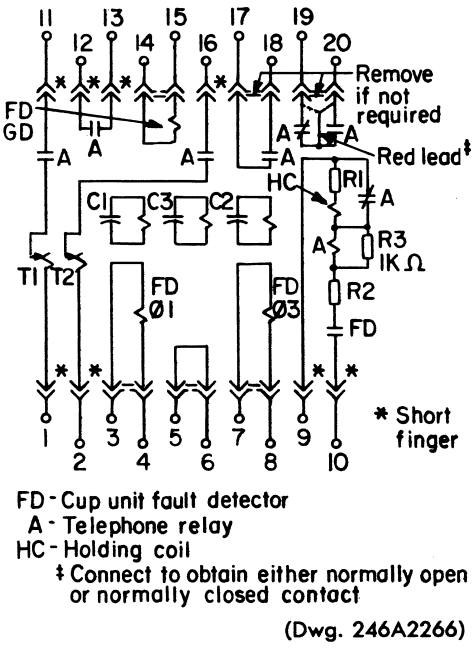


Fig. 5. Internal connections for CHC21C, front view



Selection Guide

3 PHASE PROTECTION

Frequency (Hz)	Phase Current (Amps)	Continuous Rating (Amps)	Target and Seal-in (Amps)	Contacts	Model Number	Case Size	Approx. Wt. in Lb. (kg) Net	Ship
60	1-4	5	0.2	1 N.O.	CHC12A29A	S2	20 (9.1)	25 (11.3)
	1-4		1.0		A25A			
	1-4		2.0		A28A			
	2-8		0.2		A10A			
	2-8		1.0		A2A			
	2-8		2.0		A1A			
	4-16		1.0		A7A			
	10-40		1.0		A12A			
50	2-8		1.0		A13A			

3 PHASE AND GROUND PROTECTION

Frequency (Hz)	Phase Current (Amps)	Ground Current (Amps)①	Continuous Rating (Amps) Phase Unit	Ground Unit	Aux. Dc (Volts)	Two Targets (Amps)	Contacts	Model Number	Case Size	Approx. Wt. in Lb. (kg) Net	Ship
60	1-4	0.5-2.0	4		125	0.2/2.0	4 N.O. or 3 N.O. & 1 N.C.	CHC11A29A	M2	25 (11.3)	31 (14.1)
	1-4	0.5-2.0	4		220			A52A			
	1-4	1-4	4		48			A33A			
	2-8	0.5-2.0	5		48			A25A			
	2-8	0.5-2.0	5		125			A21A			
	2-8	0.5-2.0	5		250			A26A			
	2-8	1-4	5		48			A28A			
	2-8	1-4	5		125			A22A			
	2-8	1-4	5		250			A23A			
	2-8	2-8	5		48			A34A			
	2-8	2-8	5		125			A24A			
	2-8	2-8	5		250			A27A			
	2-8	4-16	5		125			A30A			
	2-8	10-40	5		125			A31A			
	2-8	20-80	5		125			A32A			
	4-16	4-16	5		125			A46A			
	20-80	2-8	5		48			A35A			
50	2-8	0.5-2.0	5		125			A38A			
	2-8	1-4	5		125			A37A			
	2-8	1-4	5		250			A36A			
60	1-4	0.5-2.0	4.0	2.5	125	1.0	4 N.O. or 3 N.O. & 1 N.C.	CHC15A3A	M2	25 (11.3)	31 (14.1)
	2-8	0.5-2.0	5.0	2.5	48	0.2		A7A			
	2-8	0.5-2.0	5.0	2.5	125	0.2		A2A			
	2-8	0.5-2.0	5.0	2.5	125	1.0		A1A			
	2-8	0.5-2.0	5.0	2.5	250	1.0		A4A			
	2-8	1-4	5.0	5.0	48	1.0		A9A			
	2-8	1-4	5.0	5.0	125	0.2		A8A			
	2-8	1-4	5.0	5.0	125	1.0		A5A			
	4-16	2-8	5.0	5.0	125	1.0		A6A			
	4-16	4-16	5.0	5.0	125	1.0		A10A			

3 PHASE AND GROUND PROTECTION

Frequency (Hz)	Phase Current (Amps)	Ground Current (Amps)①	Continuous Rating (Amps) Phase Unit	Ground Unit	Aux. Dc (Volts)	Two Targets (Amps)	Contacts	Model Number	Case Size	Approx. Wt. in Lb. (kg) Net	Ship
60	2-8	0.5-2.0	10	2.4	48	0.2/2.0	4 N.O. or 3 N.O. & 1 N.C.	CHC21A3A	M2	22 (10)	27 (12.2)
		0.5-2.0		2.4	110			A6A			
		0.5-2.0		2.4	125			A1A			
		0.5-2.0		2.4	220			A8A			
		0.5-2.0		2.4	250			A4A			
		1-4		4.8	48			A5A			
		1-4		4.8	110			A7A			
		1-4		4.8	125			A2A			
60	2-8	0.5-2.0	10	1	125	0.2/2.0	5 N.O. or 4 N.O. & 1 N.C.	CHC21C1A	M2	22 (10)	27 (12.2)
		1-4		2	48			C4A			
		1-4		2	125			C2A			
		2-8		4	125			C3A			

① The ground unit is a separate hinged-armature device in the CHC11A and separate induction cup unit for the CHC15A. The CHC21A & 21C each use a single induction cup which responds to all phase and ground faults, therefore the phase and ground pickup adjustments are interdependent