HGA18

Single-Shot Reclosing

Single-shot reclosing relays for distribution and transmission.

Features and Benefits

- Surge withstand capability
- Mechanical target
- Drawout case

Applications

- Single immediate circuit breaker reclosure
- Remote controlled, attended and unattended stations
- Pole-mounted breakers
- Outdoor switch houses

Protection and Control

- Self-resetting single-shot reclosure

Description

The HGA18 is a self-resetting, "singleshot" reclosing relay which initiates immediate reclosure of a power circuit breaker. The HGA18 consists of an HGA unit and an R-C circuit mounted in a drawout case. The HGA unit coil consists of an operating winding and a holding winding which are connected in separate circuits (see Figures 1 and 2). The HGA18 is available in either ac or dc voltage rating. Both versions come equipped with a target in the output contact circuit. The target coil may be bypassed by means of an internal jumper if it is not needed.

Application

The HGA18 relays are designed for use where a single immediate reclosure of circuit breakers is desired. In the event that the breaker reopens after reclosure within the relay reset time, the relay will cause the breaker to lock-out. However, if the breaker remains closed for at least the relay reset time, the relay will reset and be ready for another reclosing operation. Power to operate the relay is obtained from a fully charged capacitor which is caused to discharge into the relay coil when a "b" switch on the breaker closes or a reclose initiating (RI) contact closes.

The HGA18 is well suited for use where the service does not justify subsequent time reclosures, such as provided by the SLR relay. Typical applications include remote controlled stations, attended stations where the operator's presence is only part time, unattended stations, electrically operated pole-mounted breakers, and outdoor switch houses.

Factors in Application

There are certain requirements that should be understood in order to take full advantage of immediate reclosing.

(a) Control Switch—An extra contact should be provided on the control switch to prevent the HGA 18 relay from reclosing the breaker after it has been tripped manually by the control switch.

(b) Undervoltage Devices—When such devices are on the system, it is necessary to coordinate between the HGA18 reset time and trip time of the undervoltage device.

(c) Closing Relays—Where the HGA18 relays are used, it is essential that the breaker mechanisms have closing relays which insure complete closure of the breaker even though the auxiliary switch on the breaker mechanism opens before closure is complete.

Where trip-free closing relays are used, it is necessary that they reset quickly enough to permit immediate reclosure of the breaker.

(d) Latch-checking Switches—In order to insure successful operations of breakers reclosed by HGA18 relays, it is necessary to have a latch-checking switch on all trip-free solenoid mechanisms.

(e) Holding Coil Circuit—This circuit must be complete no later than the instant when the operating coil becomes energized, and must remain complete until reclosure has progressed to the point where it will carry through even if the reclosing relay opens the closing circuit.

(f) Overcurrent Relays—The protective relays that trip the breaker obviously must open their contacts before the breaker recloses; otherwise the breaker may even trip a second time though the fault has cleared.

Selection Guide

2 N.O. Contacts

Rated Voltage		Operating Range (Volts)	Reset Time (Secs)	Target Rating (Amps)	Model Number		Case Size	Approx. Wt. In lbs. (kg)	
DC	25-60Hz ①				Standard	Shock Resistant		Net	Ship
48	.....	39-54		1.0	HGA18M3A②	.....			
125	.....	100-140		1.0	M4A	HGA18M2A②		8	15
125	.....	100-140	15	0.2	.....	M5A		(3.6)	(6.8)
250	.....	200-281		1.0	.....	M1A	S-1		
...	115	92-129	15	0.2	.....	N1A①	S-2	9 (4.1)	17 (7.7)
...	230	185-250	15	0.2	.....	N2A①	S-2	9 (4.1)	17 (7.7)

① Ac model includes external rectifier with mounting bracket.
② These models include external capacitors with mounting brackets.

(g) Power Circuit Breakers—the derating factors applying to the interrupting rating of breakers should be checked for all applications of the HGA18 relays.

Contacts

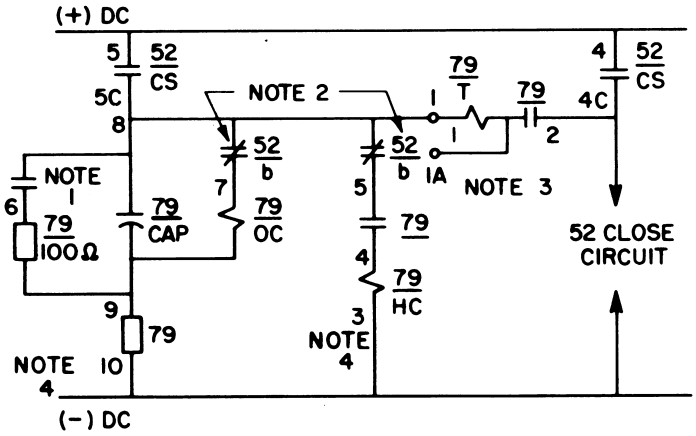
Current-closing rating of the contacts is 30 A for voltages not exceeding 250 V. The contacts have a current carrying rating of 12 A continuously or 30 A for one minute.

Interrupting ratings (non-inductive circuits) for various voltages are given in the table below:

	DC			AC	
Volts	48	125	250	115	230
Amps	1.5	0.6	0.25	20	10

Closing Time

The time for the closing of the HGA18 contacts is approximately one cycle on a 60 Hz basis. This includes the total operating time of the HGA18 relay, from the instant the "b" switch closes until the closing impulse is given to the closing relay. The closing time of the various breakers, of course, depends on several factors, such as the type of mechanism and the type and size of the breaker.



52CS - CONTROL SWITCH
79 - HGA18M

OC - OPERATE COIL
HC - HOLDING COIL
T - TARGET
CAP - CAPACITOR

NOTE 1: DISABLING CONTACT, TO BE SUPPLIED BY USER.
NOTE 2: TWO BREAKER b SWITCHES ARE NECESSARY TO AVOID A SNEAK CIRCUIT. WHEN ONLY ONE b SWITCH IS AVAILABLE, SEE DRAWING 0285A6287
NOTE 3: IF TARGET OPERATION IS NOT DESIRED, SHIFT INT. JUMPER FROM 1A TO 1.
NOTE 4: TERMINALS 3 AND 10 MUST BE OF SAME D-C POLARITY.

Fig. 4. Typical external connection of Type HGA18M relay where two 52/b contacts are available

Fig. 4. Contact arrangement of breaker control switch used in typical scheme

	16SB1B9 SWITCH			
	CLOSE	NOR AFT CLOSE	NCR AFT TRIP	TRIP
1 2 — 1				X
2				X
3 4 — 3		X	X	
4	X			
5 6 — 5	X	X		
6	X	X		

Fig. 1. Internal connection diagram for HGA18M relay

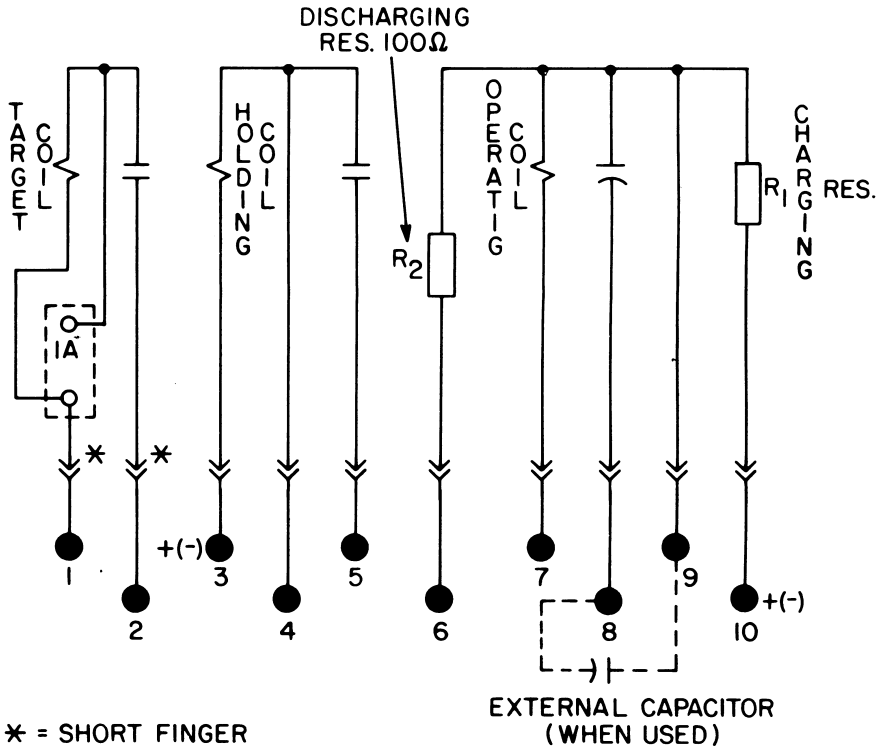


Fig. 2. Internal connection diagram for HGA18N relay