GE
Grid Solutions

Model HSA

Multicontact Auxiliary

Features and Benefits

- Electrically separate contact outputs
- Universal target dropping
- Mechanical target
- High seismic capability

Applications

- Contact multiplication

Protection and Control

- Trip and/or block close circuit breaker control

Multi-contact hand reset relay to perform auxiliary functions on AC and

Application

The HSA high-speed multicontact, auxiliary relays are applicable where it is desired that a number of operations be performed simultaneously from the operation of a single relay.

Typical functions that can be performed by these relays are:
1. Trip and lock out the main circuit breaker of a system.
2. Trip station auxiliary breakers.
3. Trip main or auxiliary field breakers.
4. Trip and lock out all breakers on a bus.

Perhaps the most important use of the HSA relay is as an auxiliary used in conjunction with differential relays for bus, transformer, line or rotating machine protection.

Construction

The HSA multi-contact, auxiliary relays are built with many parts common to the SBM control switches.

The mechanical target on the escutcheon plate assembly indicates the position of the relay. The black target indicates the reset position and the orange target, the tripped position. To reset the relay after it has been ripped, the handle is turned clockwise as indicated by the arrow on the escutcheon plate.

Since the HSA relay is similar to the SBM switch, it is available with a shaft long enough to allow it to be mounted on panels with thickness up to 1/4 inch.

Operation

The HSA relay is available with 9, 13 or 19 main electrically separate contacts. In addition, there are 2 normally closed contacts that are wired for opening the operating coil circuit. See Figure 2. The operating shaft is held in reset position by a positive roller latch which is especially constructed to resist shock and vibration. The latch is released through the action of a plunger device actuated by the relay operating coil. All HSA relays are made so that they should not normally be tripped manually; however, manual tripping can be accomplished through use of an escutcheon knockout (and predrilled hole in panel) which provides access to a screw driver operated tripping device. The time required to trip the relay, from the instant of energization of the coil to the closing of the contacts, is per HSA Relay Operating Characteristics (Figures 3 & 4), slightly less for opening of contacts.

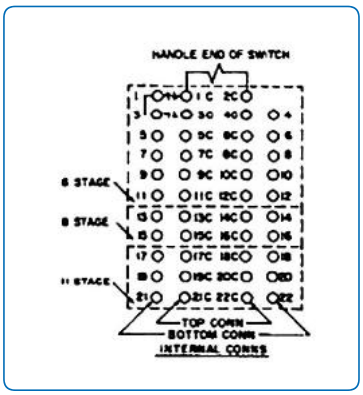

Fig. 2. HSA11 Relay Contacts

Target Dropping

Universal targets in series with HSA trip coils increase HSA trip time. A typical increase in trip time for a single 0.2 A target and an HSA with a 125 VDC trip coil is 1.3 ms.

Table 1 shows the maximum number and type of universal targets that can be dropped by the current pulse of HSA trip coils.

Table 1) Target dropping

HSA Coil Group	Coil Voltage	Number of Parallel Targets Dropped		
		0.2 A	0.6 A	2.0 A
1	48 VDC	6	6	3
2	110 VDC	6	6	2
2	125 VDC	6	6	2
3	220 VDC	6	3	1
3	250 VDC	6	4	1

NOTE: A minimum of two parallel 0.2 A targets is recommended to assure tripping of 48 VDC HSA relays.

Seismic Capability

The seismic capability of HSA N.O. (Normally Open) and N.C. (Normally Closed) contacts are given in Table 2.

Table 2) HSA seismic capability

Seismic Capability (g's ZPA)			
HSA Reset		HSA Tripped	
N.O.	N.C.	N.O.	N.C.
6.0	4.0	6.0	6.0

Service Temperature

The HSA will operate over an ambient temperature range of -20 °C to +55 °C and will not be damaged by storage ambients of -40 °C to +65 °C.

Dielectric Capability

HSA relays are rated 600 V in accordance with the Dielectric Test Section of Relay Standard ANSI/IEEE C37.90-1978.

Trip Coil Ratings

The three trip coils available for HSA relays have multiple voltage ratings as shown in Table 3. To obtain maximum tripping speed, the coils are rated for intermittent duty only.

Table 3) Trip Coil Voltage Ratings

Intermittent Rating (V)	Frequency (Hz)	Operating Range (V)	Coil Group
48	DC	32-55	1
110	DC	70-145	2
125	DC	70-145	2
220	DC	140-290	3
250	DC	140-290	3
69	50/60	45-80	1
110	50/60	70-140	2
120	50/60	70-140	2
220	50/60	140-280	3
240	50/60	140-280	3

CAUTION:
Do not hold the reset handle in the reset position if the HSA will not reset. Failure to reset indicates that the trip coil is energized. Holding the reset handle in the reset position with the trip coil energized at rated voltage will cause rapid coil heating and possible insulation damage.

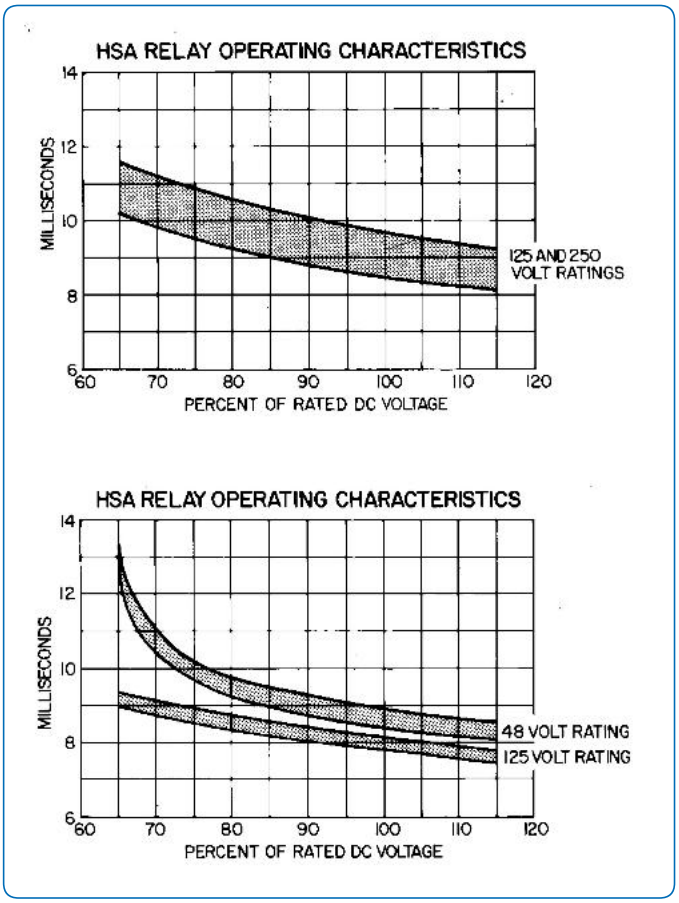

Fig. 3. Operating characteristics, 8- and 11-stage HSA relays

Contact Ratings

The current-closing ratings of the contacts is 30 A for voltages not exceeding 600 V. The contacts have a current carrying capacity of 20 A continuously. The interrupting ability of the contacts varies with the inductance of the circuit. The values (in amperes) given in Table 4 for DC inductive circuits are based on the average trip coil.

Table 4) Contact Interrupting Ratings

Circuit Volts	Amps Non-inductive		Amps Inductive (L/R- .04)	
	Single Contact	Two in Series	Single Contact	Two in Series
48 DC	10	50	6	30
125 DC	5	22	4	13
250 DC	1.5	4	1.4	3.5
120 AC	50	50	50	50
240 AC	50	50	25	50

Burdens

The burdens for the HSA relays are given in Table 5 and Table 6.

Table 5) DC burden data for HSA relays

Coil Group	Volts	Coil Resistance (Ω at 25°C ±10%)	DC Inrush Current (A)
1	48	2.85	17
2	110	11.8	12
2	125	11.8	13
3	220	47.5	5
3	250	47.5	5.5

Table 6) AC Burdens

Coil Group	Volts	Frequency	Z (Ω)	Voltage Lead Angle
1	69	60	10	30
2	110	60	11	29
2	120	60	11	29
3	220	60	45	28
3	240	60	45	28
1	69	50	10	27
2	110	50	11	24
2	120	50	11	24
3	220	50	45	23
3	240	50	45	23

Model HSA - Selection Guide

Contact Option	Group			Contact Arrangement		Approx. Wt. in lbs (kg)	
	48VDC 69VAC 50/60HzAC	110/125 VDC 110/120 VAC 50/60Hz AC	220/250DC 220/240AC 50/60 HzAC	Contact Numbers Norm. Closed	Contact Numbers Norm. Open	Net	Ship
9 CONTACT (Plus 2 Contacts in Coil Circuit)							
A	100	110	120	None	4-12		
A	101	111	121	4	5-12		
A	102	112	122	4-5	6-12		
A	103	113	123	4-6	7-12		
A	104	114	124	4-7	8-12	3.1	5
A	105	115	125	4-8	9-12	(1.4	(2.3)
A	106	116	126	4-9	10-12		
A	107	117	127	4-10	11-12		
A	108	118	128	4-11	12		
A	109	119	129	4-12	None		
13 CONTACT (Plus 2 Contacts in Coil Circuit							
B	200	220	240	None	4-16		
B	201	221	241	4	5-16		
B	202	222	242	4-5	6-16		
B	203	223	243	4-6	7-16		
B	204	224	244	4-7	8-16		
B	205	225	245	4-8	9-16		
B	206	226	246	4-9	10-16	3.5	5.4
B	207	227	247	4-10	11-16	(1.6	(2.4)
B	208	228	248	4-11	12-16		
B	209	229	249	4-12	13-16		
B	210	230	250	4-13	14-16		
B	211	231	251	4-14	15-16		
B	212	232	252	4-15	16		
B	213	233	253	4-16	None		
19 CONTACT (Plus 2 Contacts in Coil Circuit							
C	300	320	340	None	4-22		
C	301	321	341	4	5-22		
C	302	322	342	4-5	6-22		
C	303	323	343	4-6	7-22		
C	304	324	344	4-7	8-22		
C	305	325	345	4-8	9-22		
C	306	326	346	4-9	10-22		
C	307	327	347	4-10	11-22		
C	308	328	348	4-11	12-22		
C	309	329	349	4-12	13-22	4	6
C	310	330	350	4-13	14-22	(1.8)	(2.7)
C	311	331	351	4-14	15-22		
C	312	332	352	4-15	16-22		
C	313	333	353	4-16	17-22		
C	314	334	354	4-17	18-22		
C	315	335	355	4-18	19-22		
C	316	336	356	4-19	20-22		
C	317	337	357	4-20	21-22		
C	318	338	358	4-21	22		
C	319	339	359	4-22	None		

Order Code Breakdown

1) Choose the required number of contacts and their action (N.O. and N.C.)

2) Choose the operating voltage of the HSA.

HSA11 * *** *

A	9 contacts (plus 2 contacts in coil circuit)
B	13 contacts (plus 2 contacts in coil circuit)
C	19 contacts (plus 2 contacts in coil circuit)
XXX	Electrical data (see Group column under Selection guide)
X	Enter the panel thickness in inches

GEGridSolutions.com

Grid-AIS-L4-ITI_Model_HSA-1114-2017_08-EN. © Copyright 2017. General Electric Company and Instrument Transformers LLC reserve the right to change specifications of described products at any time without notice and without obligation to notify any person of such changes.

Worldwide Contact Center
Web: www.GEGridSolutions.com/contact
Phone: +44 (0) 1785 250 070
USA and Canada: +1 (0) 800 547 8629
Europe, Middle East and Africa: +34 (0) 94 485 88 00