



INSTRUCTIONS

GEI-20916C
SUPERSEDES GEI-20916B

D-C TIME-DELAY AUXILIARY RELAY

Type HGA14S

GENERAL  ELECTRIC

D-C TIME-DELAY AUXILIARY RELAY TYPE HGA 14S

INTRODUCTION

The Type HGA14S relay is an auxiliary relay designed for application where an adjustable time delay on pick-up is required.

The Type HGA14S relay consists of a hinge-type auxiliary unit, and a variable resistor all mounted in a size M1 case.

The auxiliary unit is of the hinged-armature construction with double-pole contacts. The contact circuits are closed or opened by moving contact arms, controlled by the hinged armature, which in turn is actuated by the operating coil and restrained by an adjustable control spring. The contact gap is adjustable by means of the screw contact and locknut in the right-front fixed-contact position. The armature gap and back contact wipe can be controlled by the screws and locknuts located on the moving contact arms. These latter features make it possible to reduce the pick-up energy to a relatively low value. These adjustments have been made at the factory and for normal operation should not be changed. The armature, magnet assembly, and contact assemblies are all mounted on a compact molded textolite base.

RATINGS

The Type HGA14S relay is available in d-c ratings of 48, 125, and 250 volts.

The contacts will make and carry 12 amperes continuously or 30 amperes for one minute, and will

RECEIVING, HANDLING AND STORAGE

These relays, when not included as a part of a control panel will be shipped in cartons designed to protect them against damage. Immediately upon receipt of a relay, examine it for any damage sustained in transit. If injury or damage resulting from rough handling is evident, file a damage claim at once with the transportation company and promptly notify the nearest General Electric Apparatus Sales Office.

Reasonable care should be exercised in un-

interrupt the following for a non-inductive circuit:

Volts	Interrupt (Single break)
115 a-c	2 amp.
230 a-c	1 amp.
125 d-c	0.6 amp.
250 d-c	0.25 amp.

BURDENS

The power consumption of the relay in watts depends upon the setting of the variable resistor. The following table gives the circuit resistance and capacitance, as well as the time range for the models covered by this instruction book.

TABLE I

Model	D-C Volts	Coil Ohms	Resistor Range	Pick-up time Range (CY)*	Capacitance
HGA14S11	125	12800	0-4000	2-6	25
HGA14S12	125	3070	0-4000	1-3	25
HGA14S13	250	12800	0-12000	1-6	25
HGA14S14	250	12800	0-12000	1-9	50
HGA14S15	125	12800	0-4000	2-12	50
HGA14S16	48	760	0-700	2-4	100**

*Time delays are on 60 cycle basis

**50 microfarads external

DESCRIPTION

CASE

The case is suitable for either surface or semi-

flush panel mounting and an assortment of hardware is provided for either mounting. The cover attaches to the case and each cover screw has provisions for

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

GEI-20916C Type HGA14S Auxiliary Relay

a sealing wire.

The case has studs or screw connections at the bottom only for the external connections. The electrical connections between the relay units and the case studs are made through spring-backed contact fingers mounted in stationary molded inner and outer blocks between which nests a removable connecting plug which completes the circuits. The outer block, attached to the case, has the studs for the external connections, and the inner block has the terminals for the internal connections.

The relay mechanism is mounted in a steel framework called the cradle and is a complete unit with all leads being terminated at the inner block. This cradle is held firmly in the case with a latch at the top and the bottom and by a guide pin at the back of the case. The cases and cradles are so constructed that the relay cannot be inserted in the

case upside down. The connecting plug, besides making the electrical connections between the respective blocks of the cradle and case, also locks the latch in place. The cover, which is fastened to the case by thumbscrews, holds the connecting plug in place.

To draw out the relay unit, the cover is first removed, and the plug drawn out. The latches are then released, and the relay unit can be easily drawn out. To replace the relay unit, the reverse order is followed.

A separate testing plug can be inserted in place of the connecting plug to test the relay in place on the panel either from its own source of current and voltage, or from other sources. Or, the relay unit can be drawn out and replaced by another which has been tested in the laboratory.

INSTALLATION

LOCATION AND MOUNTING

The relay should be mounted on a vertical surface in a location reasonably free from excessive heat, moisture, dust, and vibration. The relay case may be grounded if desired, using at least No. 12 B & S gauge copper wire. The outline and panel drilling diagram for the Type HGA14S relay is shown in Fig. 2.

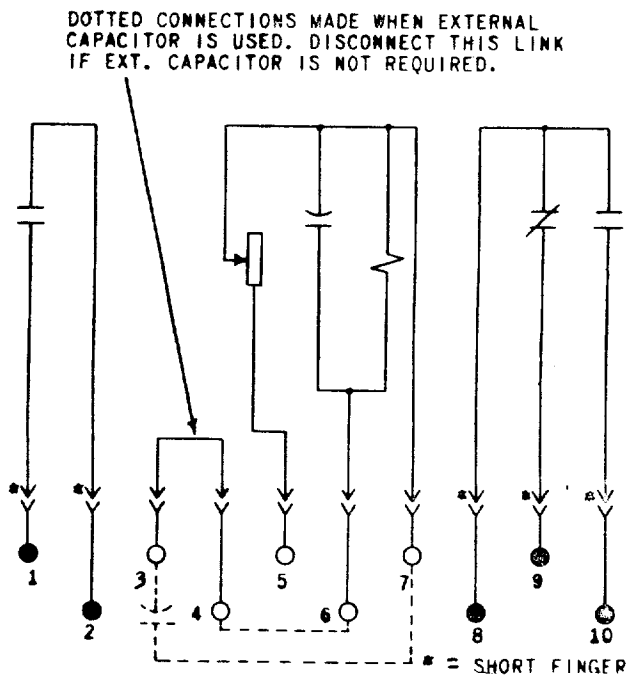


Fig. 1 Internal Connections for the Type HGA14S Relay (Front View).

CONNECTIONS

The internal connection diagram for the Type HGA14S relay as shown in Fig. 1.

When an external capacitor is specified, as on the 48 volt rating, it should be connected between studs 3 and 7, with stud 4 joined with stud 6. This connects external and internal capacitors in parallel and also causes the external capacitor to be isolated from the voltage source when the connection plug is removed.

ADJUSTMENTS

The Type HGA14S relays have been adjusted at the factory to pick up at the voltage values, with the variable resistor shorted out, indicated in the following table:

TABLE II

Model	Pick-up Volts
HGA14S11	61-67
HGA14S12	30-35
HGA14S13	65-70
HGA14S14	65-70
HGA14S15	65-70
HGA14S16	Less than 15

Under normal operating conditions it should not be necessary to change these settings. If, however, the adjustments are disturbed the following points should be observed in restoring them:

Pickup may be adjusted by shifting the position of the control spring in the notches on the armature tail-piece. A finer adjustment may be made by changing the armature gap by means of the screw contact and locknut in the front fixed contact position. The contact gap should not be decreased beyond the minimum recommended gap given below. Pickup adjustment should be made with the variable resistor shorted out.

With the correct pick-up adjustments in the minimum recommended wipe for the circuit closing contacts is one full turn of the wipe adjusting screws, in the moving contact arms. To make this adjustment, close the armature by hand and turn the screw in until they are just touching the contact carrier. Then back off each screw one full turn and secure in place with the locknut. The minimum recommended contact gap is 3-3/4 turns of the fixed contact adjusting screw. To adjust, turn the right-hand screw in until there is no gap on the circuit

closing contacts. Then back the screw out 3-3/4 turns and lock it in position with the locknut.

The pick-up time can be set at any value within the specified limits by means of the variable resistor. Before an attempt is made to change the resistor setting, the band should be loosened so that it slides easily. Otherwise, the resistor may be damaged. After the resistance adjustment be sure that the resistor band is again tightened.

OPERATION

The operation of the Type HGA14S relay as a time-delay auxiliary may be understood by referring to the internal connection diagram in Fig. 1. The operating coil of the relay unit is connected in parallel with the capacitor, this combination is connected in series with the variable resistor across studs 5 and 6. After the circuit between studs 5 and

6 is energized, the relay unit will not operate until the capacitor has charged to the pick-up voltage of the unit. The time required for the capacitor to become charged to the required potential depends upon the magnitude of the capacitor and the value of resistance. The operating time may be set at the desired value within the specified range by means of the variable resistor.

MAINTENANCE

Auxiliary relay equipment should be checked for operation at regular intervals, preferably at the same time that the associated protective devices are inspected. The relay should be checked for pick-up

value and operating time. If the contact tips require cleaning, do so with a clean fine file. Never use emery or crocus cloth for this purpose as insulating particles may become embedded in the contact surfaces.

RENEWAL PARTS

When ordering renewal parts, address the nearest sales office of the General Electric Company, refer to Part Bulletin GEF-2623, specify the quan-

tity required, give the catalog number of the part, and the completed model number of the relay as specified on the nameplate.

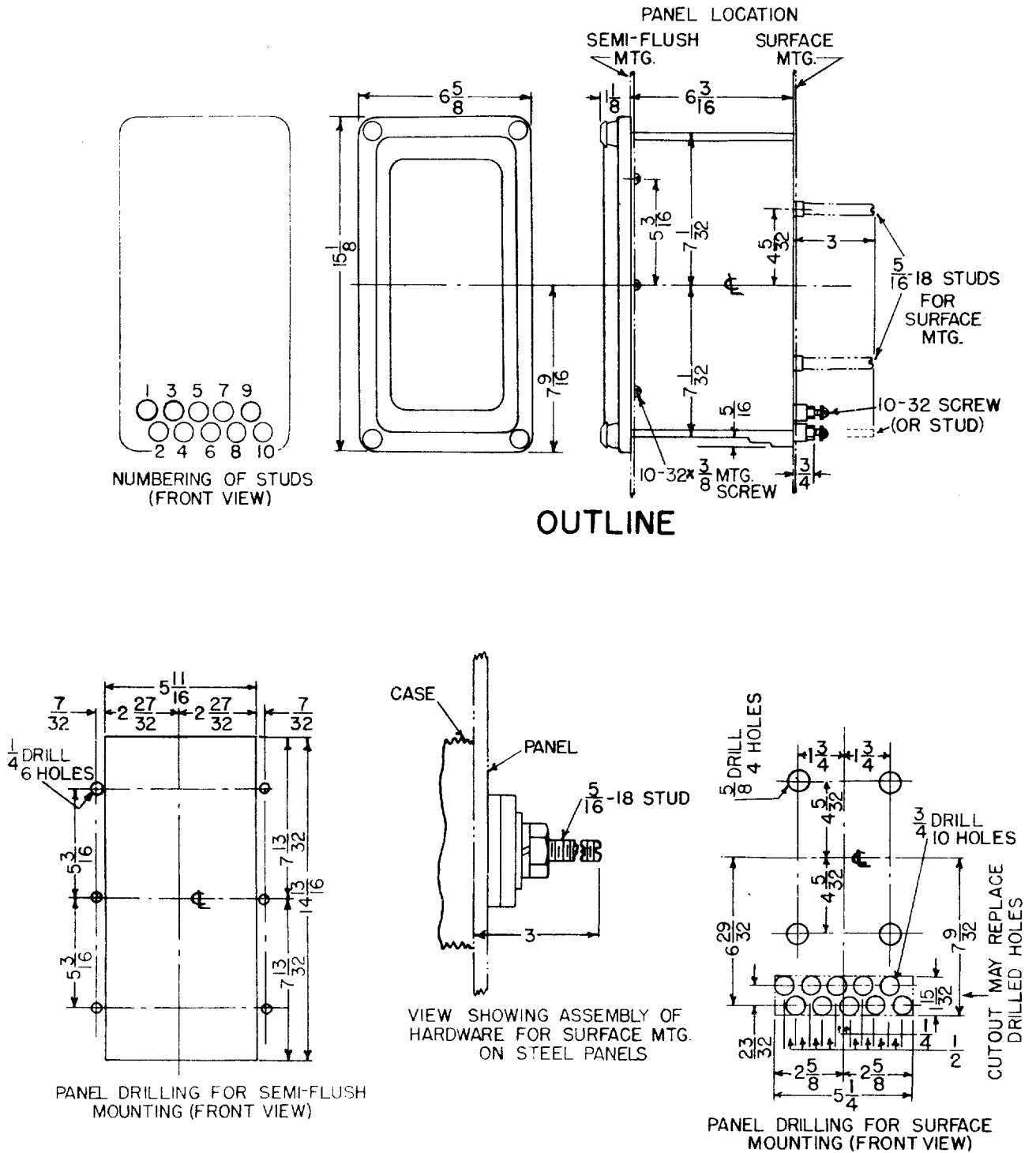


Fig. 2 Outline and Panel Drilling Dimensions for the Type HGA14S Relay.



GE Power Management

**215 Anderson Avenue
Markham, Ontario
Canada L6E 1B3
Tel: (905) 294-6222
Fax: (905) 201-2098
www.ge.com/indsys/pm**