



INSTRUCTIONS

GEK-49911B
Supersedes GEK-49911A
Insert Book GEK-45464

STATIC BREAKER BACK-UP RELAY
TYPE SBC99AB

GENERAL  ELECTRIC

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STATIC BREAKER BACK-UP RELAY

TYPE SBC99AB

INTRODUCTION

These instructions, together with those in the attached book GEK-45464, form the instructions for the SBC99AB relays.

DESCRIPTION

The SBC99AB is similar to the SBC23A with the following exceptions:

1. A contact converter provides for per-phase contact supervision of input to overcurrent level detector in addition to the normal DC input control.
2. The residual element ($3I_0$) has been eliminated.

The type SBC99AB relay is packaged in an M2D drawout case and contains the following basic components:

1. Input provisions for contact initiation that activates the power supply and provides per-phase supervision of the input to the overcurrent level detector. In addition, provision is made for a single DC input which activates the power supply and provides input to the overcurrent level detector from all three phases.
2. A fast reset current detector with one adjustable pickup setting for phase (I_A , I_B , I_C).
3. An adjustable timer to provide time for the primary breaker to operate correctly.
4. Three electrically separate contact output circuits (BFT) with two circuits having electromechanical series targets for tripping the back-up breakers.
5. A regulated power supply
6. Surge suppression on all AC and DC input circuits.

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.

To the extent required the products described herein meet applicable ANSI, IEEE and NEMA standards; but no such assurance is given with respect to local codes and ordinances because they vary greatly.

The external connections and logic diagram for the SBC99AB are shown in Fig. 1. The internal connection diagram is shown in Fig. 2. The "A," "B," and "Y" cards are the same as used for the SBC23A relay. A "C" card provided for the SBC99AB relay is shown in Fig. 3. The full wave bridges ("X" card) have been revised and are shown in Fig. 4.

* The differences between the forms of SBC99AB relays are indicated below:

FORM	VDC	FREQUENCY
001	125	60 Hz
002	220	50 Hz

APPLICATION

The SBC99AB relay is intended for use as a relay to detect that current is still flowing in a breaker pole as that pole has been tripped and thus current should disappear. This relay is similar to the SBC23A in this respect except it is designed specifically to be applied in those applications where a single phase of the three phase breaker may be selected to be opened with the other poles continuing to carry current. For an elementary of a typical application refer to Fig. 1.

OPERATION OF THE SBC99AB

This special relay is similar to the SBC23A relay and contains only the basic components except that a contact converter card is provided for phase supervision. When the power supply is activated (terminal 7 for phase A, terminal 8 for phase B, terminal 9 for phase C and terminal 17 for all three phases), the level detector produces an output that energizes the A/O timer if the current exceeds the pickup level. If the timer is energized longer than its setting, it indicates that the primary breaker has failed to clear the fault. The pickup (A) of the timer should be set long enough to give the breaker a chance to trip but short enough to ensure system stability and maximum continuity of service by operating faster than remote second zone relays. Once the A/O timer operates it energizes a transistor switch that in turns picks up BFT. If the primary breaker had cleared the fault then either the contact initiation or the level detector would have dropped out before the timer could have timed out and no back-up tripping would take place.

OPERATING PRINCIPLES

The operating principles of the SBC99AB relay are the same as the SBC23A except for the following:

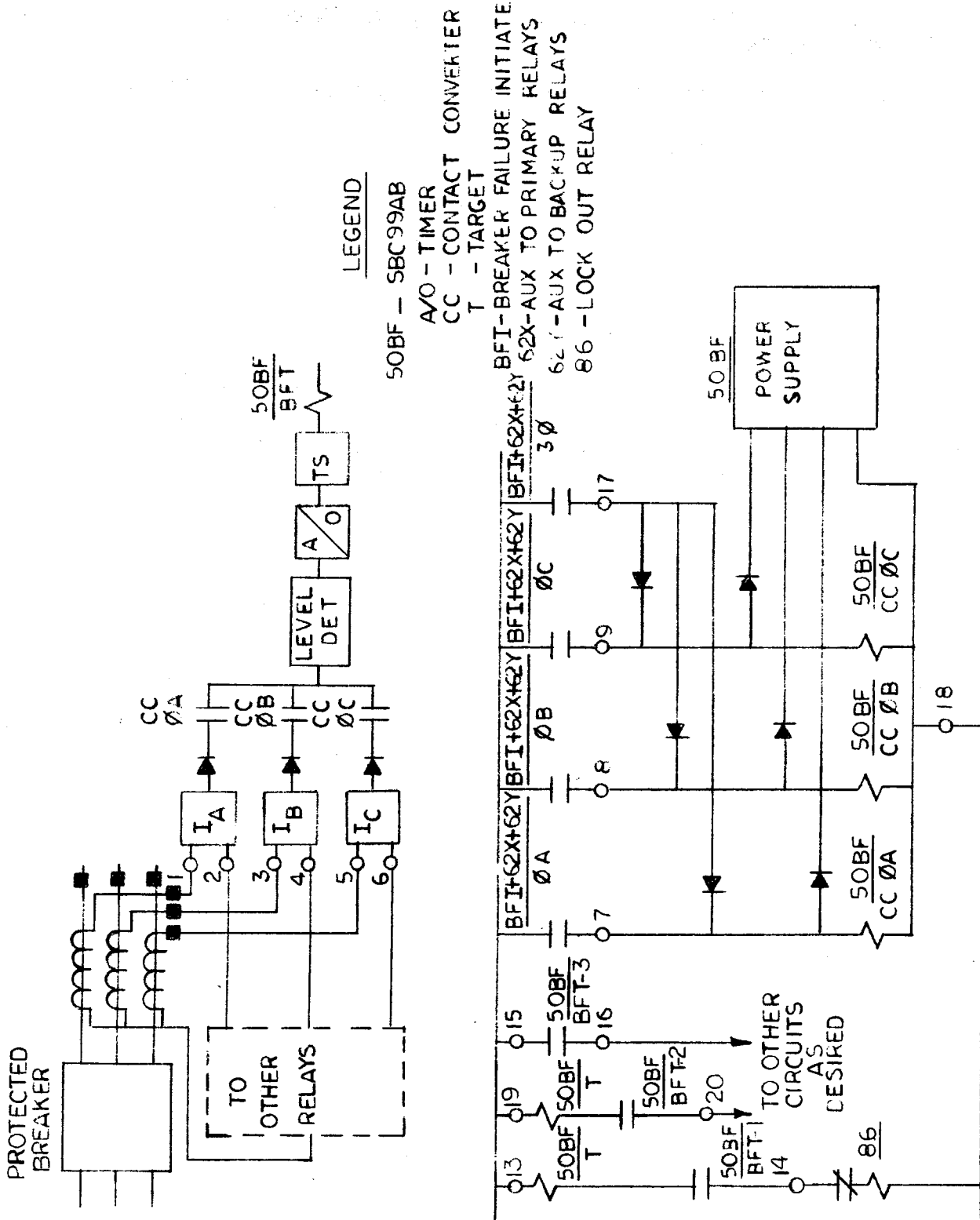
1. The new "C" card (contact converter) is provided which has no similarity to the "C" card listed in the GEK-45464 instruction book.

2. The "X" card has been modified to provide for three isolated full wave rectifier circuits.
3. The circuit between the "X" card and the "A" card has been modified.

The "X" card for the SBC99AB has three isolated diode bridges so that the input for each phase is isolated for independent control.

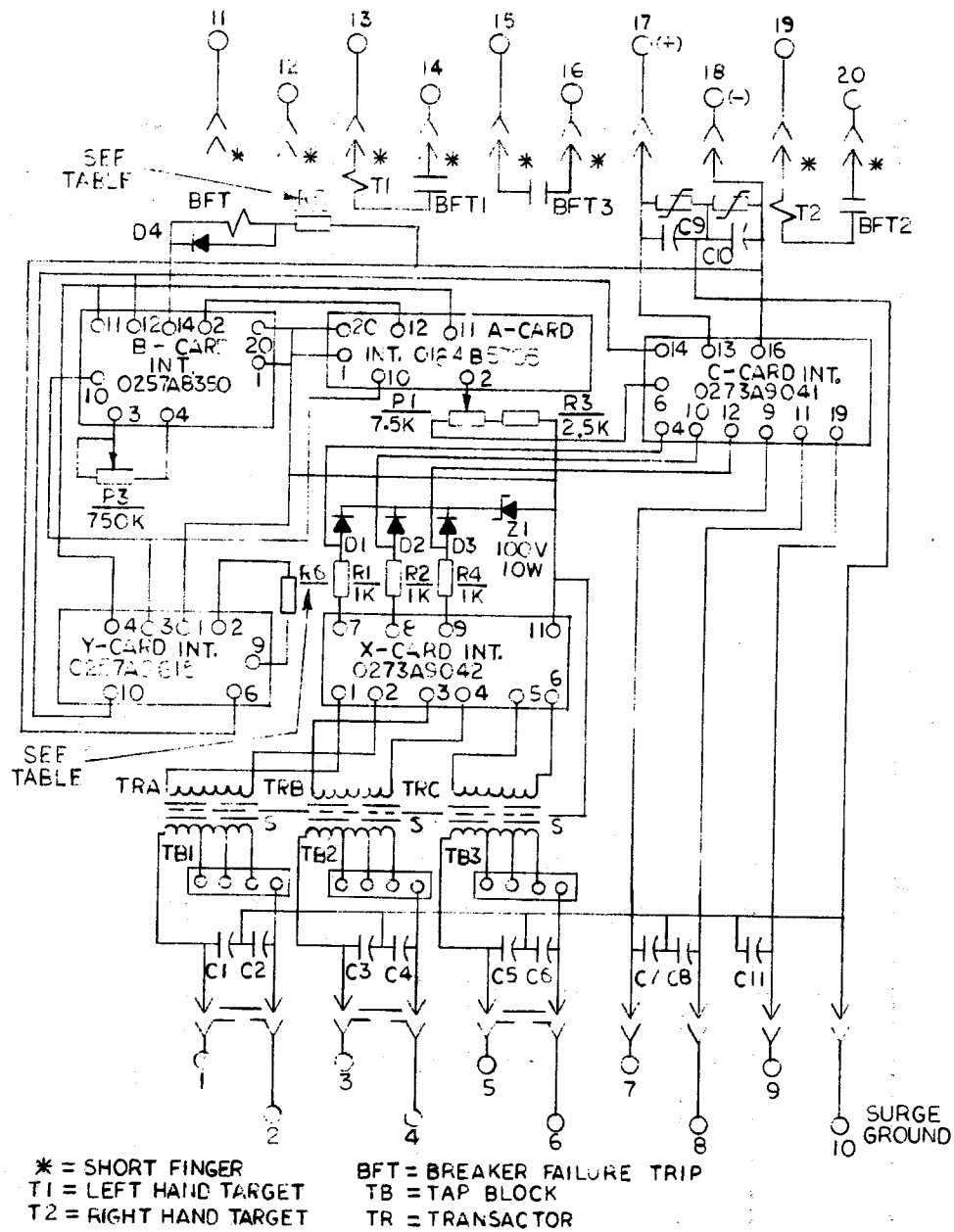
The "C" card has a relay for each phase so that phase supervision can be provided by an external DC input to operating coil of each relay. Means is also provided by diodes to energize all three phases simultaneously. Diodes also are provided so that the relay power supply will be energized simultaneously with the DC input to any or all of the relay operating circuits.

On the "C" card, one contact of each relay is connected together so that the net output will be determined by which relay or relays are closed. The internal connection diagram on Fig. 2 shows that the input level to the "A" card is controlled by the same calibration circuit. However, the output from each bridge on the "X" card uses a common zener diode where each phase is isolated by diodes.



* Fig. 1 (0273A9043-1) External Connection Diagram for SBC99AB

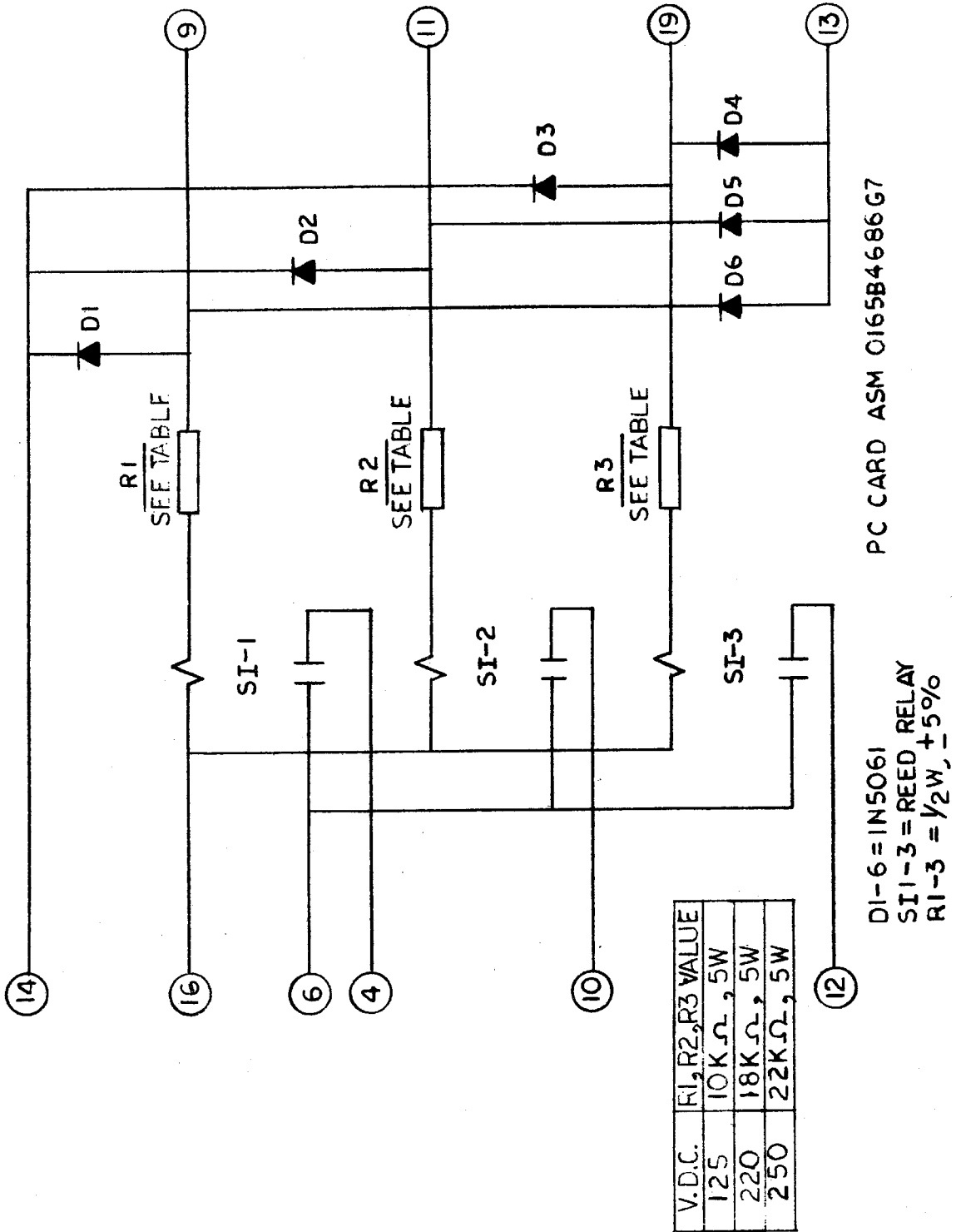
GEK-49911



VDC	R5 VALUE	R6 VALUE
4F	500Ω, 12W	250Ω, 25W
125	1500Ω, 12W	1000Ω, 25W
220	3000Ω, 12W	1800Ω, 50W *
250	3500Ω, 12W	2000Ω, 50W *

* TO BE MADE UP OF TWO 25WATT RESISTORS IN SERIES.

* Fig. 2 (0273A9040-2) Internal Connection Diagram for SBC99AB Relay



* Fig. 3 (0273A9041-1) Contact Converter "C" Card

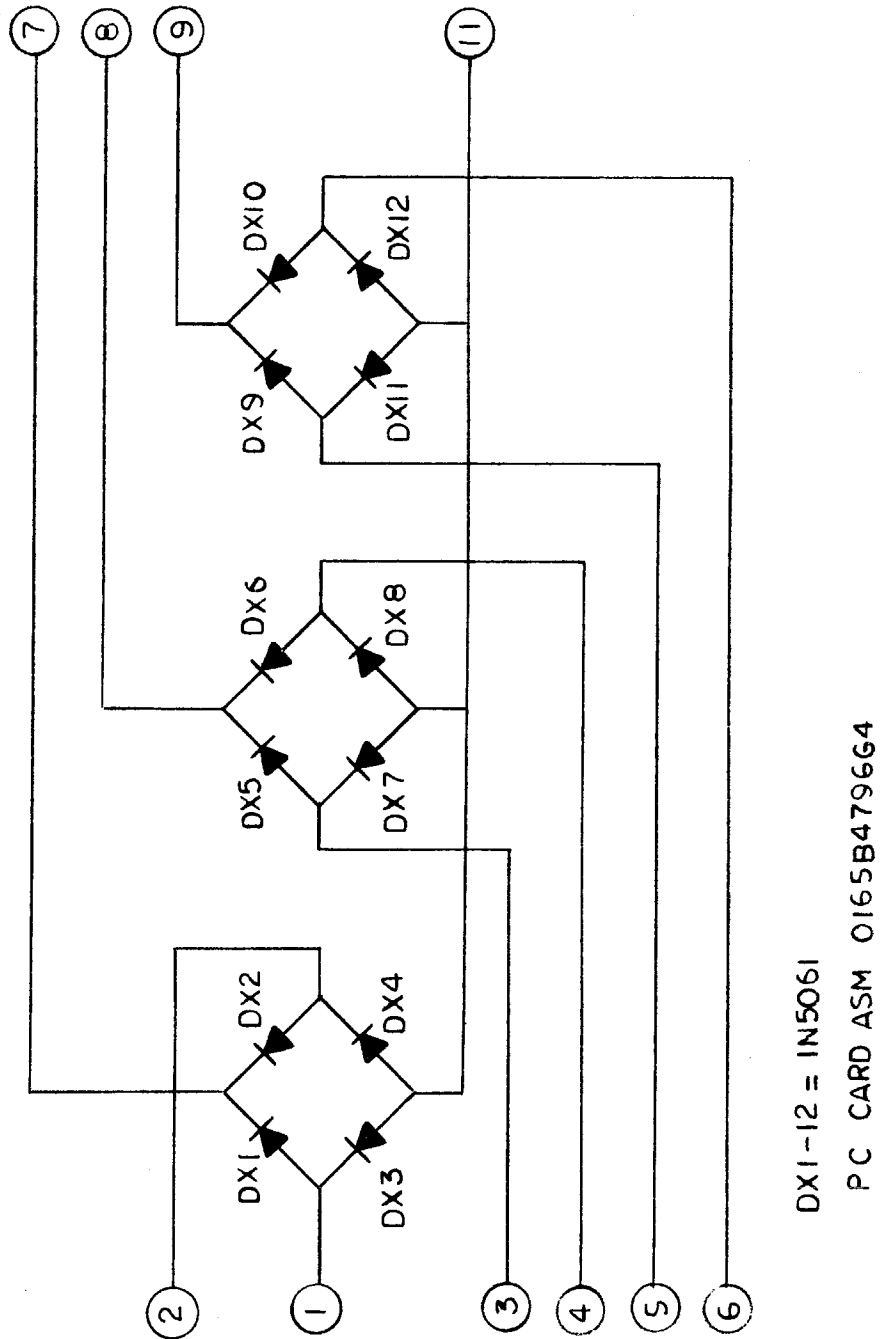


Fig. 4 (0273A9042-0) Full Wave Bridges "X" Card



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