



INSTRUCTIONS

GEK- 34147

Insert Booklet GEK-34123

RECLOSING RELAY

NLR21F

POWER SYSTEMS MANAGEMENT DEPARTMENT

GENERAL  ELECTRIC

PHILADELPHIA, PA.

RECLOSING RELAY

NLR21F

INTRODUCTION

These instructions are a supplement to the attached instruction book GEK-34123. The combination of the two provide instructions for the NLR21F relay. All information pertinent to the NLR21F relay which is not covered by this supplement is as indicated in GEK-34123.

DESCRIPTION

The NLR21F reclosing relay is designed to automatically reclose a breaker which is feeding a transmission line. The NLR21F relay is similar to the NLR21A relay except as follows:

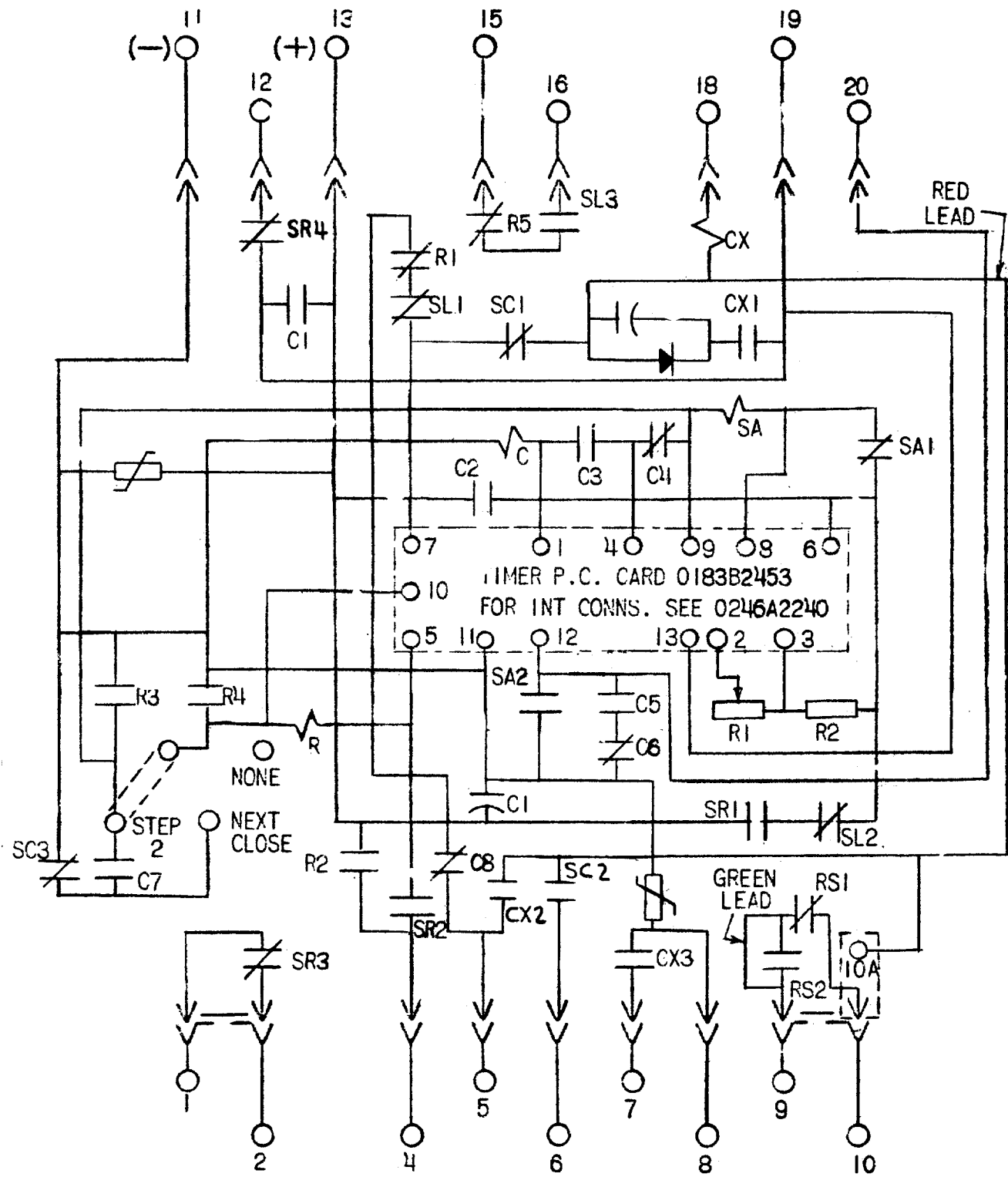
1. The internal connections diagram is shown in figure 1 of this supplement.
2. The NLR21F relay contains an auxiliary closing unit "CX" which initiates the breaker closing signal. Connections are available to permit reclosing under various conditions as indicated by external relays and as selected by the 79/CO switch. These connections are indicated on typical external connection diagram Fig. 2 of this supplement.
3. The NLR21F relay contains an extra 79/SR contact which is closed on the reset position only and wired out to stud 12. Also the NLR21F relay contains a diode which is connected in series with a CX contact between studs 17 and 19. The jumper between studs 17 and 19 is removed. The additional diode and SR contact permit the NLR21F relay to bypass the first instantaneous reclosure when desired. For example, referring to figure 2, if the 21X contact closes, it would pick up the "C" relay in less than 8 milliseconds, and the "C" relay contact between studs 14 and 5 would block any breaker reclosing signal. Then the NLR21F relay will step to the next reclosing position and then reclose the breaker.
4. A contact of the CX unit is connected to studs 7 and 8. This contact can be used to energize the synchronous check relay if desired.

OPERATING PRINCIPLES

The NLR21F relay operating principles are similar to the NLR21A relay explained in GEK-34123 except as follows:

When the NLR21F relay reaches a point where a breaker closing signal is to be given, then the 79/SC contact picks up the CX unit which in turn picks up the C unit. The CX unit seals up thru the breaker auxiliary switch contact 52/b and the C relay seals up to the positive supply voltage. A contact of the C relay steps the stepping switch at once opening the initiating 79/SC contact and closing the 79/SC contact between studs 17 and 6 to complete the breaker closing signal. As soon as the breaker closes, it will drop out the CX unit but C relay will not drop out until the step time interval of 5 seconds is completed. Thus the NLR21F breaker reclosing settings are the same as for the NLR21A relay.

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.



O = POST NO. ON PRINTED CIRCUIT CARD

FIG. 1 (0246A3330-1 SH. 1) Type NLR21F Internal Connections Diagram

STEPPING SWITCH CONTACTS

CONTACTS	SWITCH CONTACTS		
	RESET	STEPS 1-34 INC.	LOCKOUT
SL ($\overline{\text{X}}$)	CLOSED	CLOSED	OPEN
SL ($\overline{\text{+}}$)	OPEN	OPEN	CLOSED
SR ($\overline{\text{+}}$)	OPEN	CLOSED	CLOSED
SR ($\overline{\text{X}}$)	CLOSED	OPEN	OPEN
SC ($\overline{\text{+}}$)	CLOSED BY ADJUSTABLE CAMS IN ANY 3 NON-ADJACENT STEPS		
SC ($\overline{\text{X}}$)	CLOSED WHEN SC CONTACTS ($\overline{\text{X}}$) ARE OPEN		
SA ($\overline{\text{+}}$)	CLOSED WHEN STEPPING SW. COIL IS ENERGIZED		
SA ($\overline{\text{X}}$)	OPEN WHEN STEPPING SW. COIL IS ENERGIZED		

MODEL	FORM			
12NLR21F(-)A	1	2	3	
VOLTS	250	125	118	
RESISTANCE IN OHMS				
C COIL	14,000	3,600	500	
R COIL	16,000	3,600	600	
CX COIL	16,000	3,600	600	
SA COIL	1500	400	70	
R1	1MEG.	1MEG.	1MEG.	
R2	18,000	8,000	2,000	
CAPACITANCE VALUE				
C1	1uf	1uf	1uf	

FIG. 1 (0246A3330-1 SH. 2) Type NLR21F Internal Connections Diagram

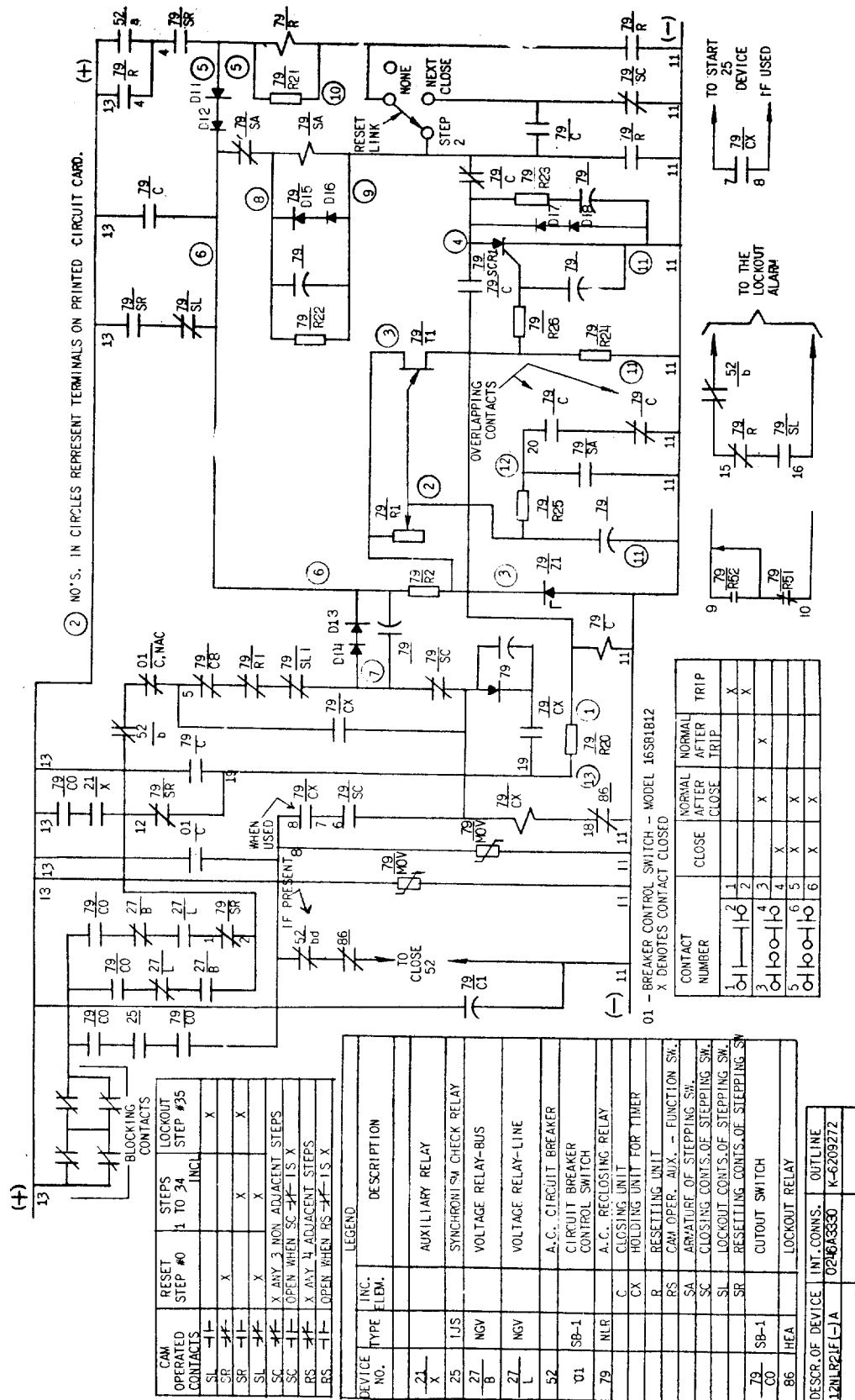


FIG. 2 (0165B2634-0) Type NLR21F External Connections Diagram



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