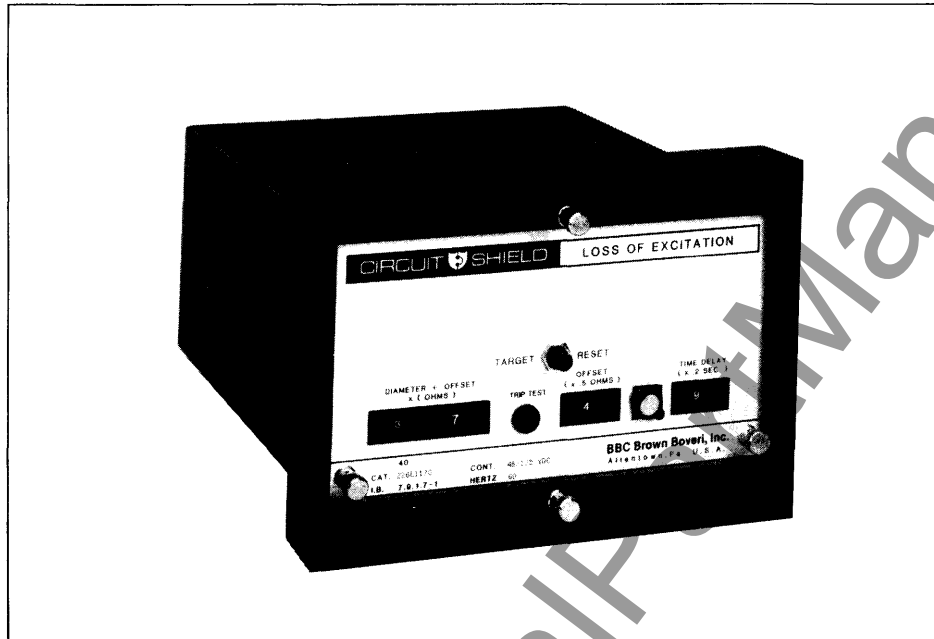


September 1995
Supersedes Descriptive Bulletin 41-727S,
pages 1-2, dated November 1990
Mailed to: E, D, C/41-700B

Device Number: 40

CIRCUIT SHIELD[®] Type 40 Loss of Excitation Relay



Application

The Type 40 is an offset mho impedance relay used for loss of excitation protection of a generator operating in parallel with other system generators.

Loss of excitation can be detrimental to the system as well as to the affected machine. Depressed internal voltage causes the machine to take VARS. The system generators must then supply the system deficit and the machine VARS as well.

The decay of the internal voltage causes reduced power output. The resulting imbalance of mechanical input and electrical output causes machine acceleration and ultimate loss of stability may result.

The power swing due to loss of excitation is detected by the off-set mho characteristic shown in Figure 2. The apparent impedance viewed from the generator bus changes as a function of the advancing generator angle and reaches a value between the transient reactance X_d' and the synchronous reactance X_d of the generator. The Type 40 characteristic encloses the area of final impedance and trips the unit on the loss of excitation condition.

Features

- Built-in test
- Frequency compensated
- Accurate settings
- Easy to make settings
- Seismic capacity to 6g ZPA
- Transient immunity
- 2 year warranty
- UL recognized

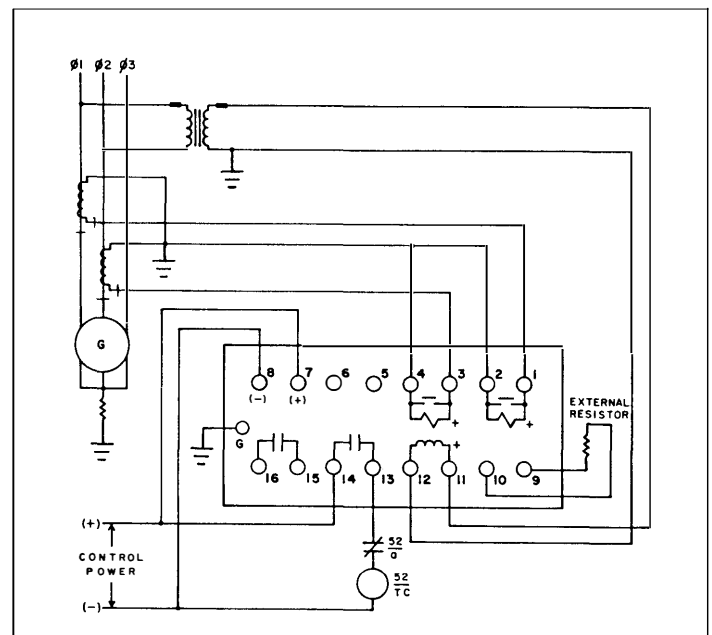


Figure 1. Typical Connections

Specifications

Input Circuit Rating:	120 Vac nominal
Potential:	208V, maximum continuous Models available for 50 Hz and 60 Hz
Current:	5A, nominal 10 amperes continuous 200 amperes, one second
Burden:	Potential 0.3 VA at 120V Current 0.7 VA at 5A
Control Power:	Models available for: 48/125 Vdc at 0.06A; 48/110 Vdc at 0.06A; 220 Vdc at 0.06A; 250 Vdc at 0.06A; 24/32 Vdc — use Dev. 96 DC/DC Converter; 120 Vac at 0.03A
Output Circuit:	1 Normally open contact; 1 Selectable normally open or normally closed
Output Circuit Rating:	Each contact at 125 Vdc 30 amps. Tripping Duty 5 amps. Continuous 1 amp. Opening Resistive 0.3 amp. Opening Inductive
Timer:	0.2-3.0 seconds in steps of 0.2 seconds
Temperature Range:	Minus 20 to Plus 70°C
Seismic Capability:	More than 6g ZPA either axis biaxial multifrequency vibration without damage or malfunction (ANSI/IEEE C37.98)
Transient Immunity:	More than 2500V, 1 MHz bursts at 400 Hz repetition rate, continuous (ANSI C37.90.1 SWC); Fast Transient test; EMI test.
Dielectric:	2000 Vac RMS, 60 seconds all circuits to ground
Weight:	Unboxed — 3.8 lbs (1.7 kg) Boxed — 4.5 lbs (2.0 kg)
Volume:	Boxed — 0.26 cubic feet

How To Specify

Relay shall be Asea Brown Boveri Type 40 or equal. Relay shall be capable of withstanding 6g ZPA seismic stress without malfunction. An operation indicator shall be provided. Built-in means shall be provided to allow operational tests without additional equipment.

How To Order

For a complete listing of available loss of excitation relays see TD 41-025. To place an order, or for further information contact the nearest ABB Representative.

Further Information

- List Prices: PL 41-020
- Technical Data: TD 41-025
- Instruction Book: IB 7.9.1.7-2
- Technical Paper: TP 7.9.10
- Other Protective Relays:
 - Application Selector Guide, TD 41-016
 - Generator Protection Application Guide AN 41-725S

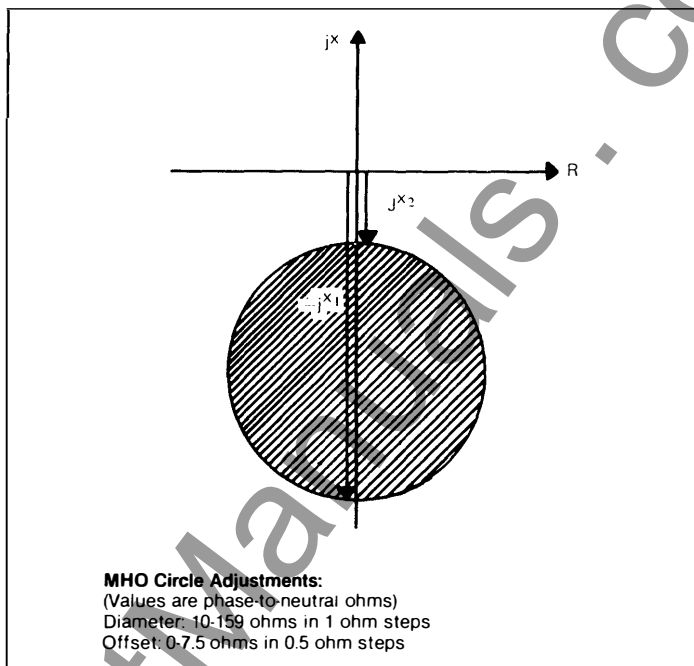


Figure 2. Operating Characteristic

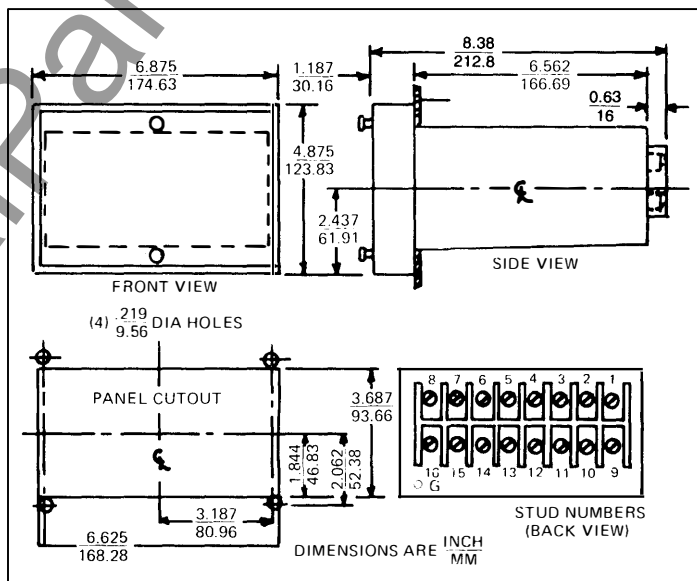


Figure 3. Relay Outline

November, 1990
Supersedes Section 7.9.0.3, Type 40 on
page 1, dated January 1, 1990
Mailed to: E, D, C/41-700B

CIRCUIT SHIELD[®] Type 40 Loss of Excitation Relay

Type	Max. Continuous Ratings Voltage	Current	Freq.	Control ^① Voltage	Catalog Number Drawout Test Case
40	208 Vac	10 A	60 Hz	48/125 Vdc	426E1170
				48/110 Vdc	426E1100
	250 Vdc			426E1150	
	120 Vac		426E1160		
	50 Hz		48/125 Vdc	426F1170	
			48/110 Vdc	426F1100	
250 Vdc		426F1150			
			120 Vac	426F1160	

Internal Connections: 16D426A

Type 96 DC-DC Inverters available for applications using 24 or 32 Vdc control.

① For other control voltages contact the nearest District Office.

To place an order, or for further information, contact the nearest District Office.

Internal Connections

16D426A Type 40
Loss of Excitation Relay
Drawout Test Case

