ABB Power T&D Company Inc.
Relay Division
Coral Springs, FL
Allentown, PA

July, 1991
Supersedes DB 41-764, pages 1-4,
dated August, 1978
Mailed to: E, D, C/41-200B

Over/Undervoltage Relay for
Class 1E Application
Device Number: 27 or 59

Type SSV-T Voltage Relay

Application

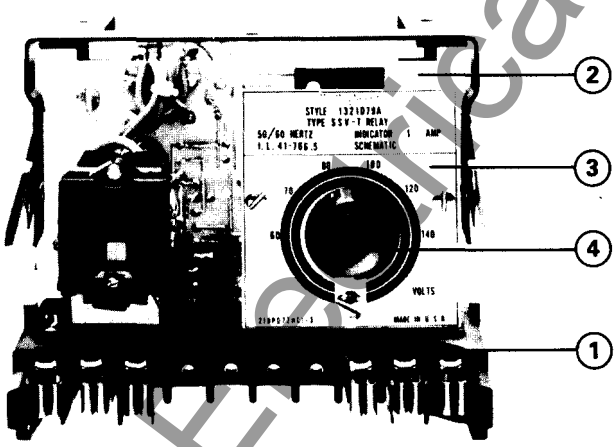
The solid state Type SSV-T voltage relay is a high seismic relay, suitable for nuclear power station relaying protection. The relay is adjustable over a wide range of voltage and has a calibrated scale plate which indicates the pick-up setting. The output unit is a telephone relay and an ICS (Indicating Contactor Switch) seal-in device.

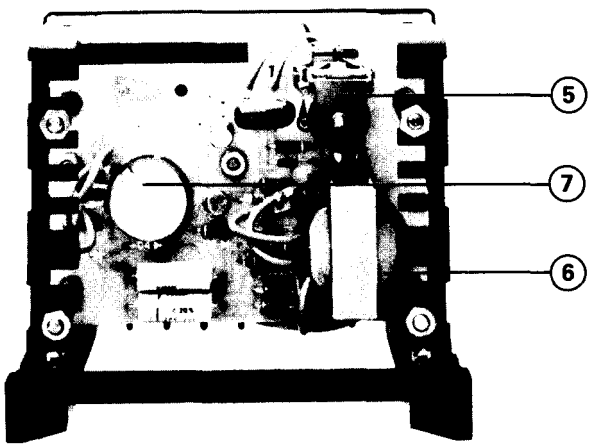
The Type SSV-T relay has a high ratio of drop-out and is particularly suitable for use in applications requiring an accurate voltage level detector.

Class 1E Application

The SSV-T relay has been specially designed and tested to establish its suitability for Class 1E applications. Materials have been selected and tested to insure that the relay will perform its intended function for its design life when operated in a normal environment as defined by ANSI standard C37.90 – 1971, when exposed to radiation levels up to 10^4 rads, and when subjected to seismic events producing a Shock Response Spectrum within the limits of the relay setting.

"Class 1E" is the safety classification of the electric equipment and systems in nuclear power generating stations that are essential to emergency shutdown of the reactor, containment isolation, cooling of the reactor, and heat removal from the containment and reactor, or otherwise are essential in preventing significant release of radioactive material to the environment.





Design Features

① Indicating Control Switch
② Circuit Board Module
③ Calibrated Scale Plate
④ Potentiometer (R2) Dial
⑤ Output Telephone Relay (SSV)
⑥ Transformer
⑦ Potentiometer (R2)

Characteristics SSV-T

Range:	60 – 140 Volts 140 – 320 Volts 280 – 640 Volts
Continuous Rating:	Highest voltage of range setting
Operating Frequency:	50/60 Hz
Temperature Error:	2% between −20°C and +65°C
Drop-out Ratio:	92% to 99%
Response Time:	Pickup Time = 7 – 10 ms Dropout Time = 14 – 40 ms (Fig. 1)
Burden:	1 VA at 120 volts 60 hertz
Frequency Response:	(Fig. 2)

Trip Circuit

The main contacts will safely close 30 amperes at 250 volts dc and the seal in contacts of the indicating contactor switch (when supplied) will safely carry this current long enough to trip a circuit breaker. The indicating contactor switch (when supplied) has a pickup of approximately 1 ampere. Its dc resistance is 0.37 ohms.

Further Information

List Prices: PL 41-020
Technical Data: TD 41-025
Instructions: IL 41-766.5
Other Protective Relays:
Application Selector Guide, TD 41-016

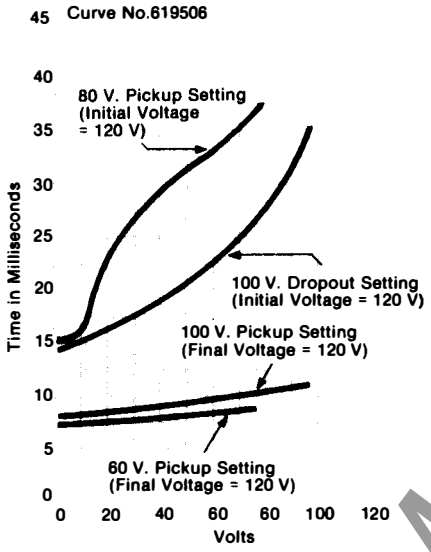


Fig. 1 Typical Operating and Reset Time Curves of the Type SSV-T Relay (60-140 V)

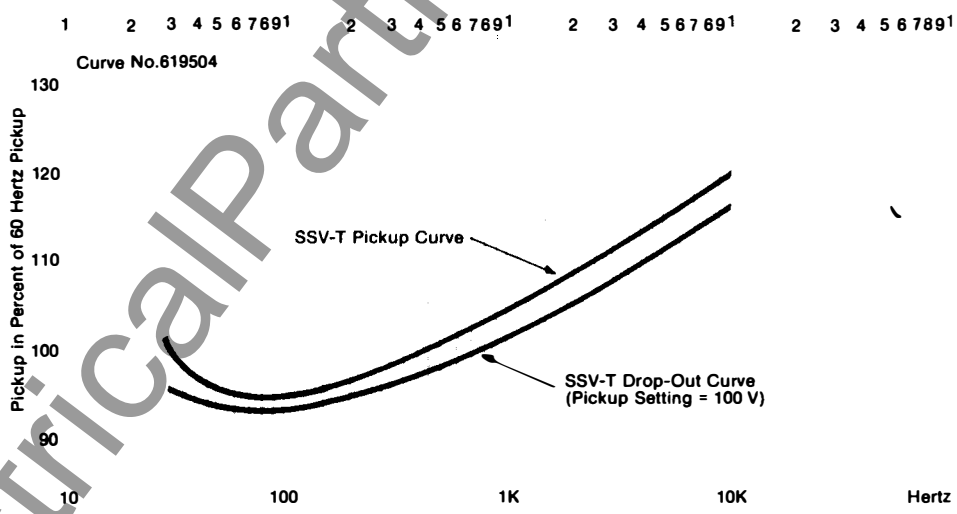


Fig. 2 Typical Frequency Reponse Curve of the Type SSV-T Relay (60-140 V)

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Over/Undervoltage Relay for Class 1E Application

Type SSV-T Voltage Relay

Over or Undervoltage Relays, Instantaneous, 50/60 Hertz (Device Number: 27 or 59)

Type	Indicating Contactor Switch	Adjustable Range (AC)	Drop Out Ratio	Contacts (Each Unit)	Relay Data		
					Block Diagram	Style Number	Case Size
One Unit Per Case							
SSV-T	1 amp dc	60-140 Volts	90-98%	1M1B	3516A14	1321D79A01	**FT-11**
	0.2 amps dc	60-140		1M1B	3516A14	1321D79A11	
	None	60-140		2M①	3527A97	1321D79A13	
	1 amp dc	140-320		1M1B	3516A14	1321D79A10	
	None	60-140		1M1B①	3533A36	1321D79A15	
Three Units Per Case							
SSV-T	3 – 1 amp	60-140 Volts	92-99%	1M1B①	3525A80	1338D83A01	**FT-21**
	1 – 1 amp	60-140		1M1B①	3525A81	1338D83A02	

① Contacts are electrically independent – refer to block diagram reference.