



ELECTRICALLY OPERATED S2500 LINE MOLDED CASE CIRCUIT BREAKER

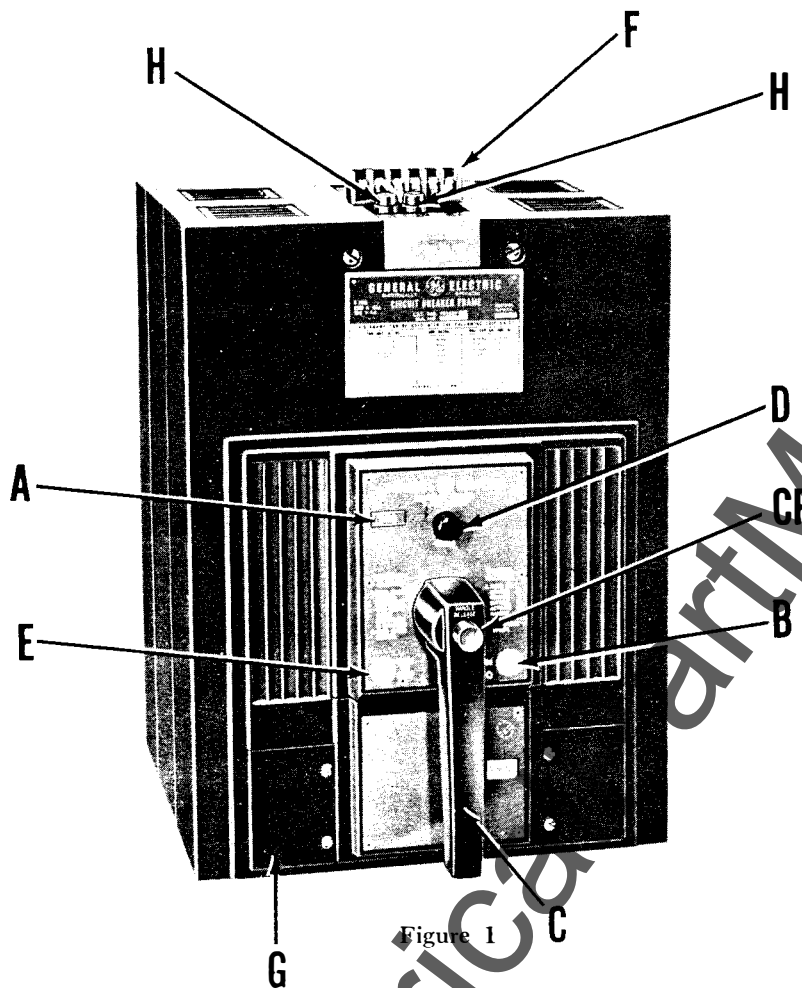


Figure 1

DESCRIPTION:

The Electrically Operated S2500 line molded case circuit breaker is similar to the manually operated S2500 in that it will open automatically under abnormal conditions when applied within its interrupting capabilities.

This circuit breaker may be closed remotely by first initiating a charging cycle, then energizing the closing solenoid. It may also be opened remotely by the use of the shunt trip supplied as standard or optional undervoltage release. These operations may be performed locally at the front of the breaker: "Charge" pushbutton initiates the electrical charging cycle; "Close" pushbutton closes the breaker; "Open" pushbutton opens the breaker. In addition, the manual handle may be used as a manual substitute to charge the breaker for subsequent closing. Once the handle release button has been depressed and handle cocked for the first power stroke, however, the manual charging sequence of three 120° clockwise power strokes *must* be completed.

NOTE: Breaker must only be mounted vertically with line end up to insure proper operation of drive unit.

- A Indicator** — Shows breaker position. Open (Green) Closed (Red) Charged (Yellow)
- B Charge Button (Electrical)** — Initiates electrical charging of mechanism.
- C Manual Handle** — May be used to manually charge mechanism.
- CR Manual Handle Lock Release Button**
- D Close Button (Mechanical)** -- Closes breaker from charged condition.
- E Open Button (Mechanical)** — Opens breaker from closed condition.
- F Terminal Board**
- G Trip Unit Escutcheon Plate**
- H Motor Protection Fuses**

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.

OPERATING INSTRUCTIONS

CIRCUIT BREAKER OPEN

With the breaker OPEN, push the charge button, or close the remote charging circuit, to charge the breaker mechanism. The indicator will show charged when the mechanism charging cycle is completed. Charging may also be done manually by holding down the handle release button and using the manual handle. The handle must first be rotated 120° counterclockwise to cock it, then 120° clockwise to partially charge the mechanism. This sequence *must* be performed three times to fully charge the mechanism.

WARNING – THE MANUAL HANDLE IS FOR CHARGING ONLY AND WILL NOT TURN THE BREAKER ON OR OFF.

MECHANISM CHARGED

With the mechanism charged, push the CLOSE button, or remotely close the closing circuit, to close the breaker mechanism. The indicator will show CLOSED when this function is completed. Unless the device is wired for automatic recharging, the mechanism may also be discharged without closing the breaker contacts by pushing the OPEN button.

BREAKER CLOSED

With the breaker closed, push the OPEN button, or close the remote opening circuit, to open the breaker contacts. The indicator will show OPEN when this function is completed.

AUTOMATIC OPERATION

AUTOMATIC CLOSING

This may be accomplished by connecting terminal 5 to terminal 6. The breaker will close automatically as soon as the charging cycle is completed.

AUTOMATIC CHARGING

Automatic charging can be accomplished by connecting terminal 3 to terminal 4. The breaker mechanism will charge automatically as soon as the breaker is opened (tripped).

NOTE: Some accessory devices operate by maintaining the breaker in the tripped condition. When these accessories are used in conjunction with automatic charging, special control circuitry is required to prevent continued recycling (pumping) of the charging mechanism. Applications involving the use of automatic charging when the breaker is equipped with the following accessories should be reviewed with the factory.

1. Undervoltage Release
2. Kirk Interlock
3. Padlock device
4. Bell Alarm Overcurrent Lockout

SERVICE AND MAINTENANCE

I. Removal of Outer Cover

1. Remove accessory power leads from Terminals 1 and 2. Press "Open" Button Figure 2 (E) to open breaker contacts or discharge mechanism.
2. Remove trip unit escutcheon plate Figure 1 (G) by removing screws Figure 2 (J).
3. Remove cover mounting screws Figure 2 (K), 4 screws – 2 concealed behind escutcheon plate.
4. Remove outer cover taking care that Terminal Board support slips out of notch in outer cover and remains with mechanism assembly.

Note: Do not separate power unit from inner cover as loss of factory adjustment will result.

II. Removal of Inner Cover and Power Unit Assembly

1. Unscrew inner cover retaining nut shown on Figure 3 (L).
2. Remove inner cover and power unit assembly Figure 2 (M) from breaker base Figure 2 (N).

Trip unit is now accessible for removal and replacement as described in GEH-3371.

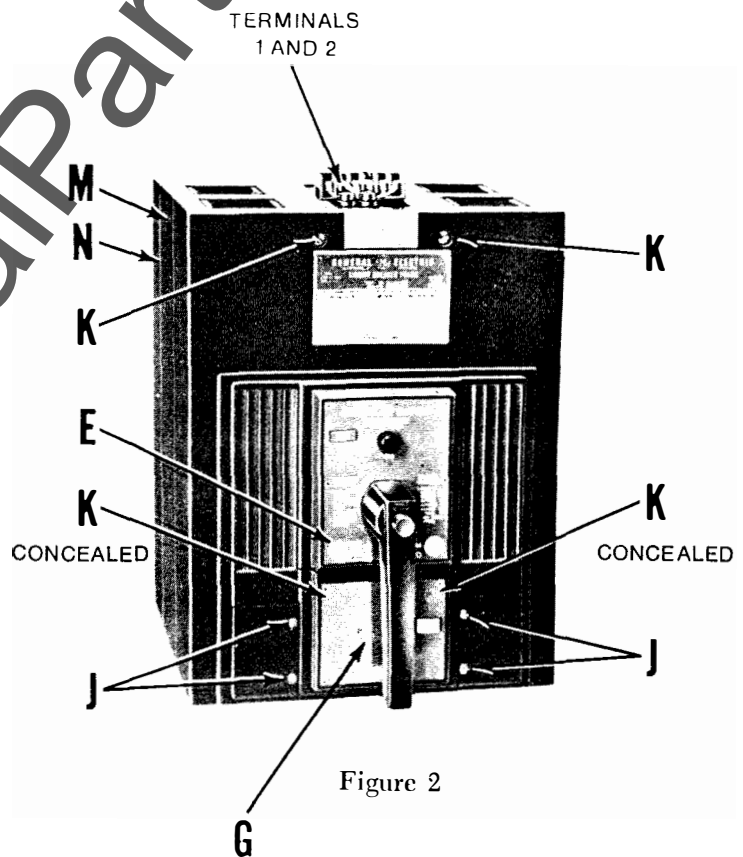
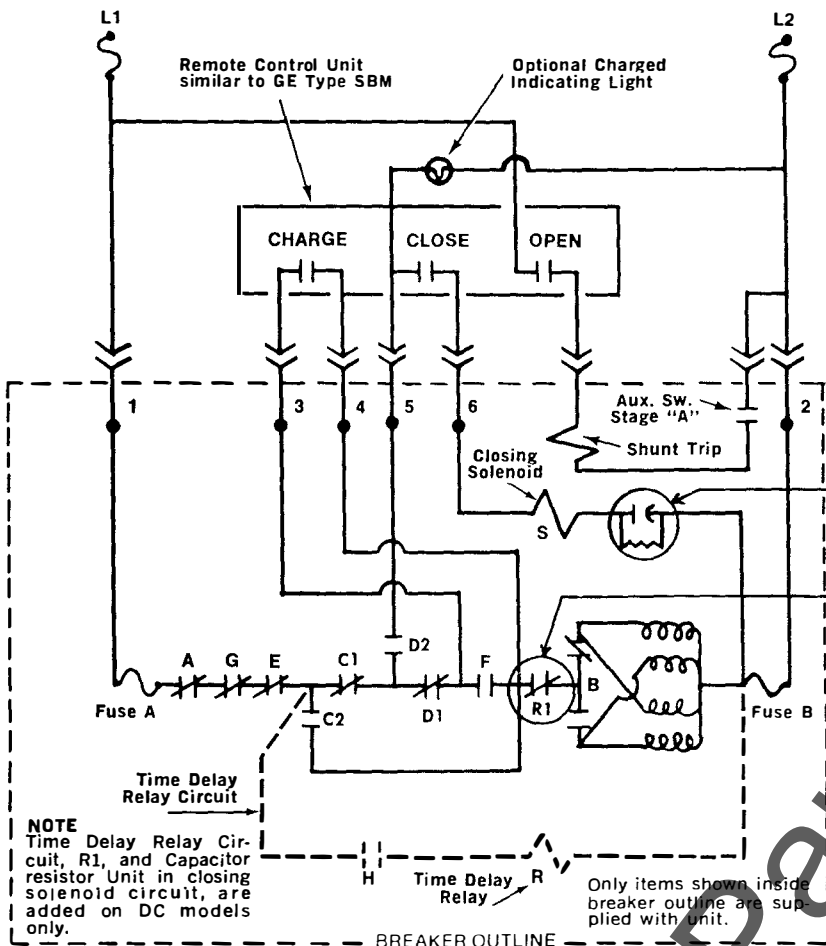


Figure 2

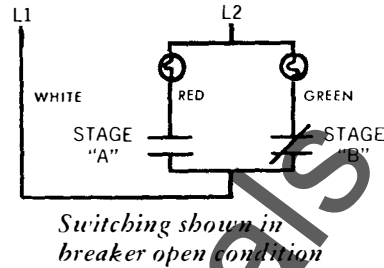
WIRING DIAGRAM

ELECTRICALLY OPERATED S-2000 AND S-2500, 2- AND 3-POLE MOLDED CASE CIRCUIT BREAKER



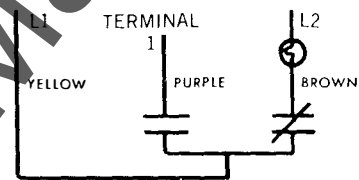
ACCESSORIES

OPTIONAL AUX. SW. FOR CLOSE-OPEN INDICATION



Switching shown in breaker open condition

OPTIONAL OVERCURRENT LOCKOUT AND BELL ALARM SWITCH FOR OVERCURRENT TRIP INDICATION



Switching shown with breaker overcurrent tripped.

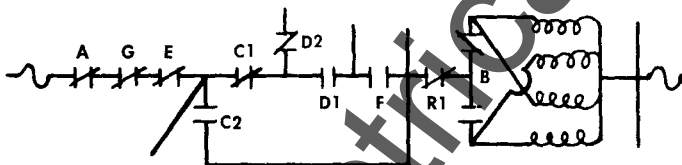
FOR ANTIPUMP FEATURE WITH OPERATOR WIRED FOR AUTOMATIC CHARGING WITH A.C. CONTROL VOLTAGES, USE AS SHOWN TO LOCK L1 OPEN.

FOR THIS FEATURE WITH D.C. CONTROL VOLTAGES, USE APPROPRIATE BELL ALARM SWITCH CONTACTS TO CONTROL RELAY CONTACTS TO LOCK L1 OPEN.

SWITCHING SHOWN IN BREAKER OPEN CONDITION

NOTE

As unit goes from OPEN to CHARGED condition, C2 closes and C1 opens to seal in motor circuit.

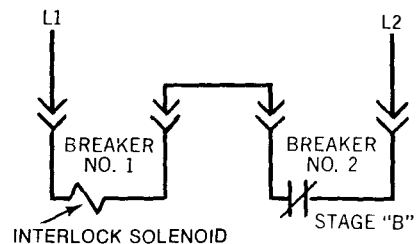


SWITCHING SHOWN IN BREAKER CHARGED CONDITION



SWITCHING SHOWN IN BREAKER CLOSED CONDITION

OPTIONAL MANUAL CLOSING INTERLOCK



Switching shown in breaker open condition

RECOMMENDED FUSES A & B	
120V AC	4 AMP TIME DELAY
125V DC	FuseTron MDX4 or Equiv.
240V AC	2 AMP TIME DELAY
250V DC	FuseTron MDX2 or Equiv.
24V DC	20 AMP TIME DELAY
	FuseTron MDL20 or Equiv.
48V DC	10 AMP TIME DELAY
	FuseTron MDL10 or Equiv.



III. RE-ASSEMBLY OF UNIT

1. Slide inner cover and power unit assembly on to breaker base and mechanism shown in Figure 4 taking care to assure correct lineup of handle shaft Figure 4 (P) and operating levers Figure 4 (R). Operating lever slots must engage in grooves in rollers. Figure 3 (S)
2. Tighten inner cover retaining nut shown in Figure 3 (L)
3. Slide outer cover on to unit taking care that terminal board support Figure 3 (T) slides into slots in cover.
4. Install cover mounting screws Figure 2 (K).
5. Install trip unit escutcheon plate (G) with screws, Figure 2 (J)
6. Reconnect power leads as shown on wiring diagram.

TRIP UNIT RATING LABEL

When frame and trip unit are ordered separately and assembled in the field, the trip unit rating label (included in the hardware kit) must be attached to the front of the breaker.

To attach, remove blue plate from the center of escutcheon plate G. Secure label to escutcheon plate in area directly behind window in blue plate. Replace blue plate.

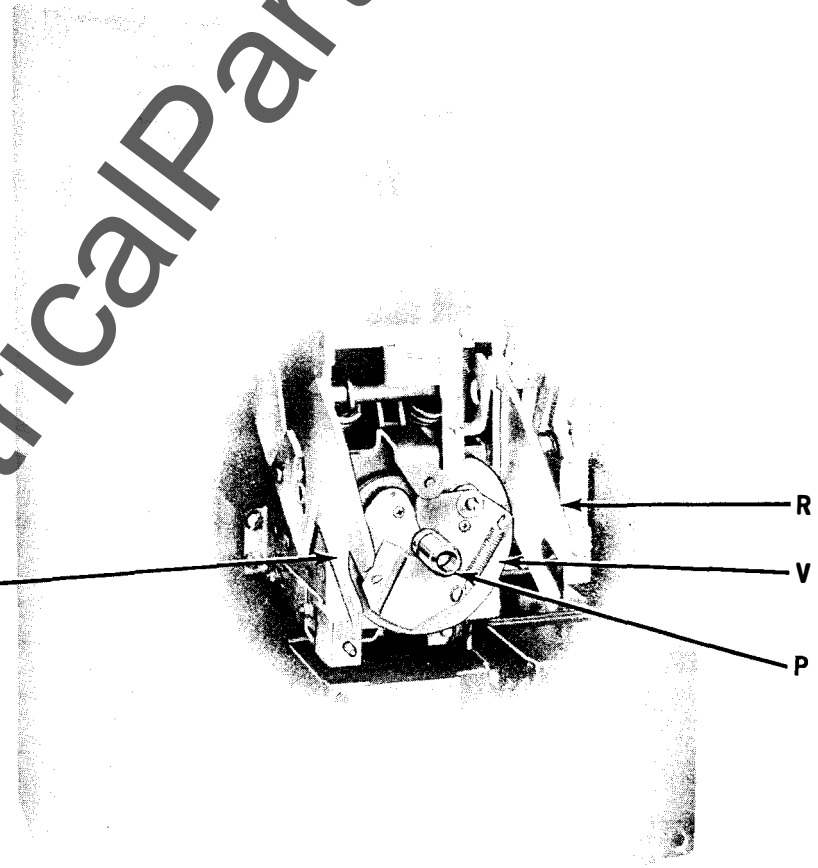


Figure 4

Switch and Electrical Component Layout
(Switch identification as shown in wiring diagram)

- Switch A. Trip indication sensing switch.
- Switch B. Motor rotation direction switch.
- Switch C. Carriage retracted cutoff switch.
- Switch D. Mechanism latched & hooked sensing switch.
- Switch E. Correct cam position sensing switch.
- Switch F. Charging switch.
- Switch G. Correct handle position sensing switch.
- Switch H. Motor lockout switch.

Wiring diagram and identification of electrical components can be used as an aid to solving operational problems, should they arise. Unit is so interlocked that if manual charging cam, Fig. 4, (V) is out of position, or if handle lock release button is depressed, electrical charging or closing is prevented. If screw driven carriage is out of extreme downward position, it will be impossible to manually or electrically close breaker. Slots are provided in outer ends of motor shafts, Fig. 3 (W) to permit clockwise rotation of left motor shaft (counter-clockwise for right motor shaft) to move carriage to correct bottomed position. Turn shaft with screwdriver until no further motion of carriage is noted.

Warning: Never attempt to close breaker with outer cover removed as metal parts will be at line potential.

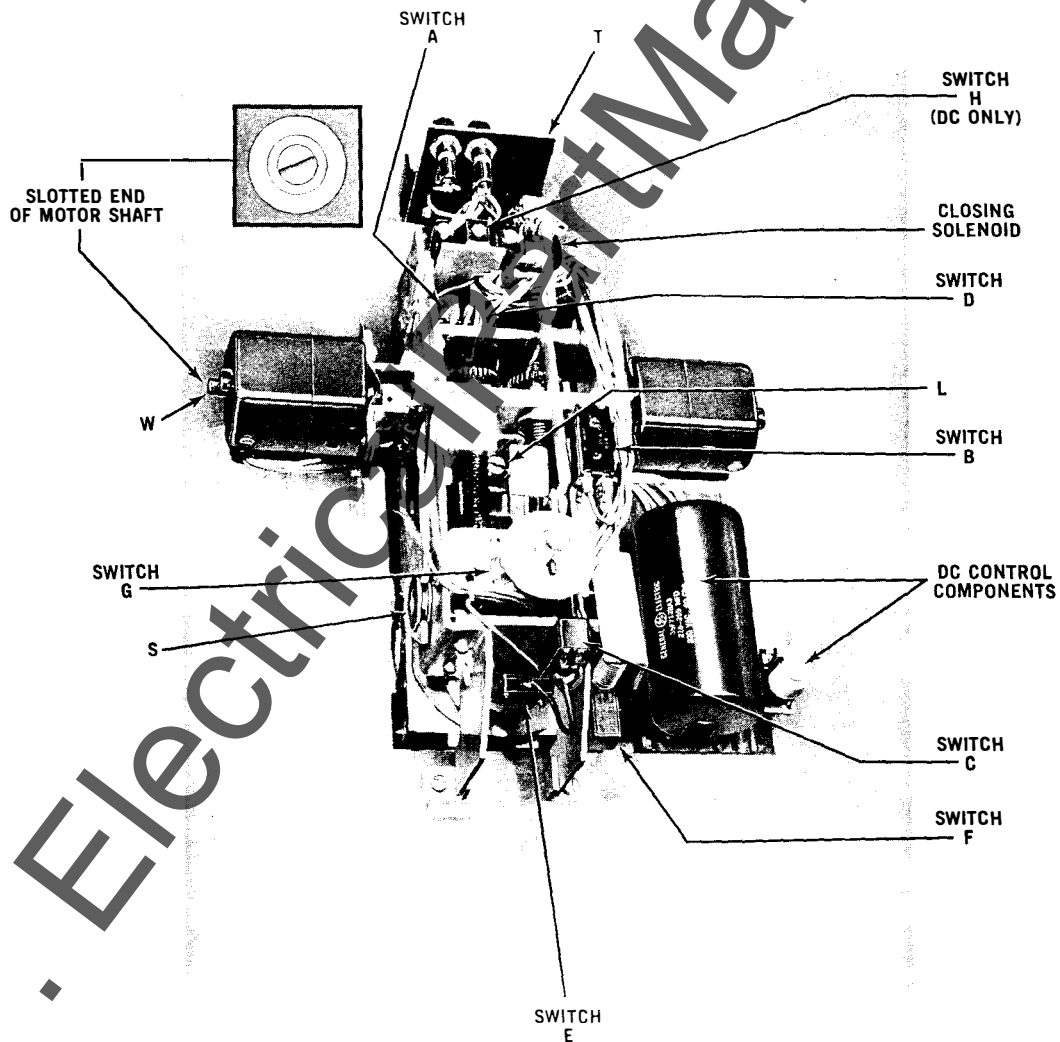


Figure 3

OPERATIONAL DATA

Control Voltage	Motors Locked Rotor Amps Peak ^①	Motors Running Amps RMS	Charging Time Sec. ^②	Closing Time Cycle ^③	Opening Time Cycle ^④	Closing Solenoid Amps Peak
120V AC	15	3.0	3.5	5	3	8.8
240V AC	9	2.0	3.5	5	3	17.8
125V DC	21	2.5	3.5	5	3	14.2
250V DC	12	1.5	3.5	5	3	28.4
24V DC ^⑤	30	9.5	3.5	5	3	13.0
48V DC ^⑤	28	5	3.5	5	3	13.0

FOOTNOTES:

- ① A 1/2 cycle peak of approximately 50% more than locked rotor current occurs as motors reverse.
- ② Average charging time at 100% rated voltage. Indicates time from sequence initiation to motor cutoff.
- ③ Average closing time at 100% rated voltage. Indicates time from sequence initiation to breaker contacts closed.
- ④ Average opening time at 100% rated voltage. Indicates time from sequence initiation to auxiliary switch cutoff (breaker contacts open).
- ⑤ Tests run with battery power supply.

Note: For 480V applications use at least a .5 KVA dry type transformer. Optional overcurrent trip lockout device shown on wiring diagram prevents remote charging after an overcurrent trip. OPEN button on breaker front must be depressed to reset lockout device and release breaker latch.

Installation of Terminal Stubs

Stationary Breaker — Refer to GEH-3371.

Drawout Breaker — Refer to GEH-3386.

Consult factory for availability of other ratings and frequencies and special features.

S 2000					
CAT. NO.	POLES	VOLTS	CAT. NO.	POLES	VOLTS
TSP202F1	2	120 AC	TSP203F1	3	120 AC
TSP202F2	2	240 AC	TSP203F2	3	240 AC
TSP202F3	2	125 DC	TSP203F3	3	125 DC
TSP202F4	2	250 DC	TSP203F4	3	250 DC
TSP202F5	2	24 DC	TSP203F5	3	24 DC
TSP202F6	2	48 DC	TSP203F6	3	48 DC

S 2500					
CAT. NO.	POLES	VOLTS	CAT. NO.	POLES	VOLTS
TSP252F1	2	120 AC	TSP253F1	3	120 AC
TSP252F2	2	240 AC	TSP253F2	3	240 AC
TSP252F3	2	125 DC	TSP253F3	3	125 DC
TSP252F4	2	250 DC	TSP253F4	3	250 DC
TSP252F5	2	24 DC	TSP253F5	3	24 DC
TSP252F6	2	48 DC	TSP253F6	3	48 DC

