

## SP4T Electromechanical Relay Normally Open Switch DC to 12.4 GHz, 2M Lifecycles, N, 50 Watts, 28V, TTL, Diodes, Solder Pins

The FMSW6500 is a Single Pole Four Throw (SP4T) electromechanical relay switch that operates across a frequency range from DC to 12 GHz and can handle up to 50 Watts of average power in a break before make condition. The 50 Ohm design is rated for 2 million lifecycles and features a Normally Open Actuator where the selected position remains active with constant voltage, all positions are open when voltage is removed. Additional features include TTL control logic, and suppression diodes which limit voltage spikes or reverse current. Impressive typical performance includes 0.2 dB insertion loss and isolation greater than 70 dB. This switch requires +28Vdc bias voltage and operates over a temperature range of -25°C to +65°C. The rugged and compact package assembly supports N Type female connectors and Solder Pins for DC command control functions. And for highly reliable operation, the model is guaranteed to meet MIL-STD-202 environmental test conditions for shock and random vibration.

### Electrical Specifications (TA = +25°C, DC Voltage = +28 Vdc)

Switch Type	SP4T
Actuator Type	Normally Open
Actuator Options	TTL Logic
TTL Control	on: 2.4 to 5 Volts off: 0 to 0.8 Volts

Description	Min	Typ	Max	Units
Frequency Range	DC		12.4	GHz
Operating Voltage		+28		Volts
Actuating Current @ +28 Volts			280	mA
VSWR		1.4:1	1.7:1	
Insertion Loss		0.2	0.7	dB
Isolation	60	70		dB
Input Power (CW) (at 12.4 GHz)			50	Watts

### Performance by Frequency

Description	F1	F2	F3	F4	F5	Units
Frequency Range	DC - 1	1 - 4	4 - 8	8 - 12		GHz
VSWR, Max	1.25:1	1.4:1	1.45:1	1.7:1		
Insertion Loss, Max	0.3	0.4	0.4	0.7		dB
Isolation, Min	70	60	60	60		dB

### Mechanical Specifications

<b>Size</b>	
Length	3.2 in [81.28 mm]
Width/Diameter	2.5 in [63.5 mm]
Height	2.5 in [63.5 mm]
Weight	0.4 lbs [181.44 g]



### Features:

- Single Pole Four Throw (SP4T) Electromechanical Relay Switch
- DC to 12 GHz Frequency Range
- Normally Open Actuator
- TTL Logic Control
- Suppression Diodes
- 2M Lifecycle Rating
- Insertion Loss 0.2 dB typ
- Isolation > 70 dB typ
- VSWR as low as 1.25:1 max
- +28 Volt DC Bias
- Solder Terminal Pins for DC Command Control
- N Type Female Connectors
- -25°C to +65°C Operating Temperature
- Up to 50 Watt Average Power Handling
- 50 Ohm Design
- Hot Switching Capability - Consult Factory
- S-Parameter Data available upon request
- Rugged Design meets Mil-STD-202 Test Conditions

### Applications:

- Aerospace & Defense
- Test & Measurement
- Microwave Radio Systems
- Military & Commercial Communication Systems
- Research & Development
- SATCOM
- Wireless Communications
- Enterprise
- IoT

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## Connectors

RF Connector Type

N Female

## Environmental Specifications

### Temperature

Operating Range

-25 to +65 deg C

Storage Range

-55 to +100 deg C

Shock

MIL-STD-202 Method 213, Condition D, 500G (non oper)

Vibration

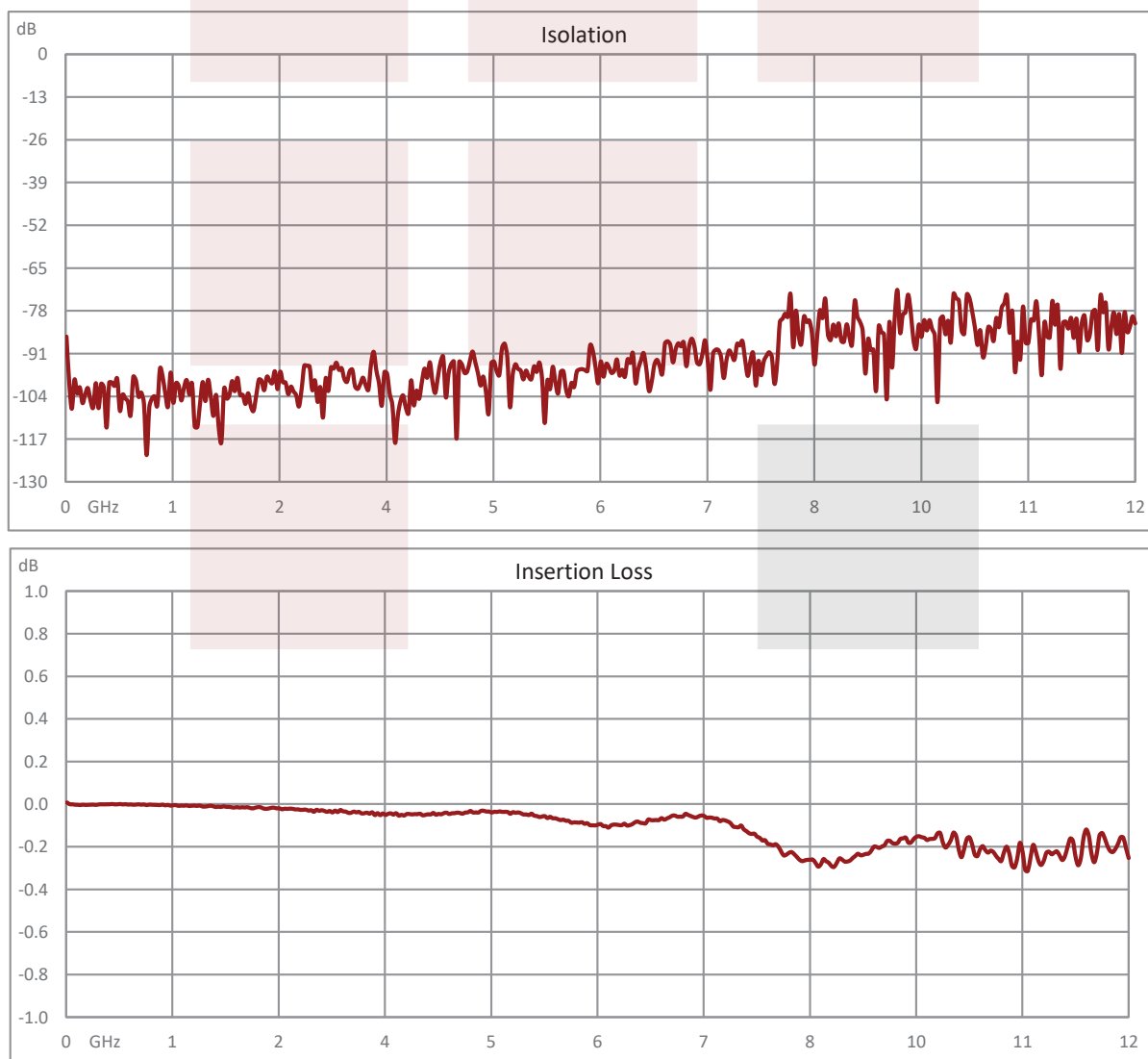
MIL-STD-202 Method 204, Condition D, 10G RMS (non oper)

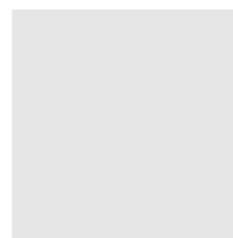
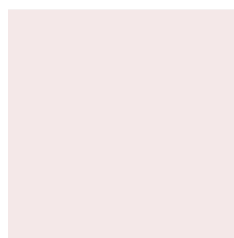
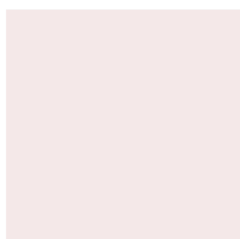
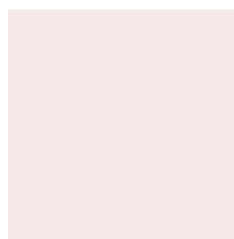
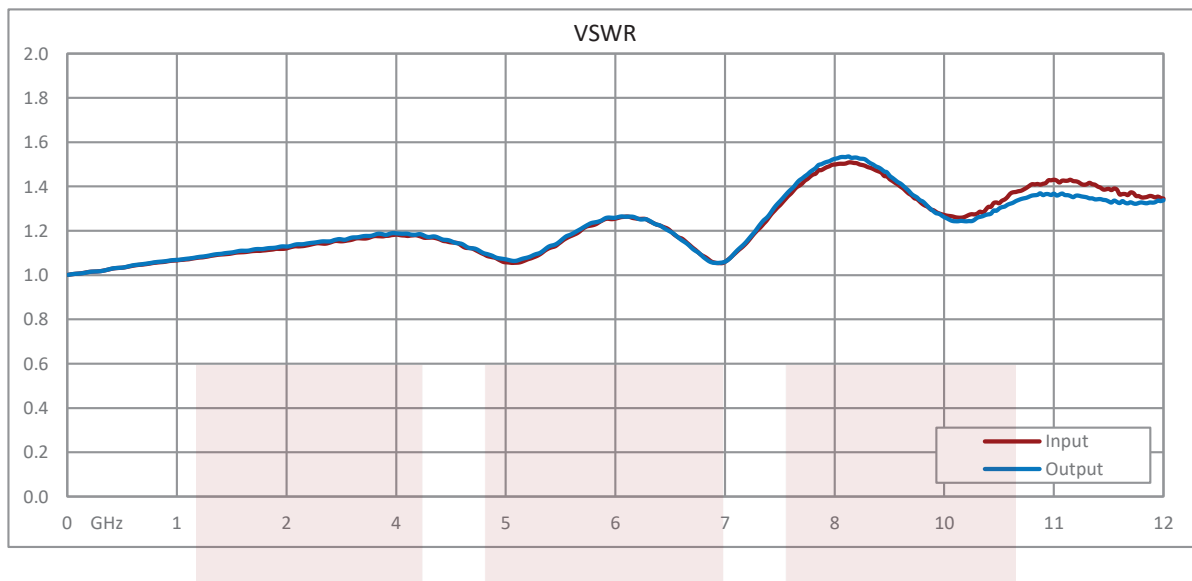
## Compliance Certifications (see [product page](#) for current document)

## Plotted and Other Data

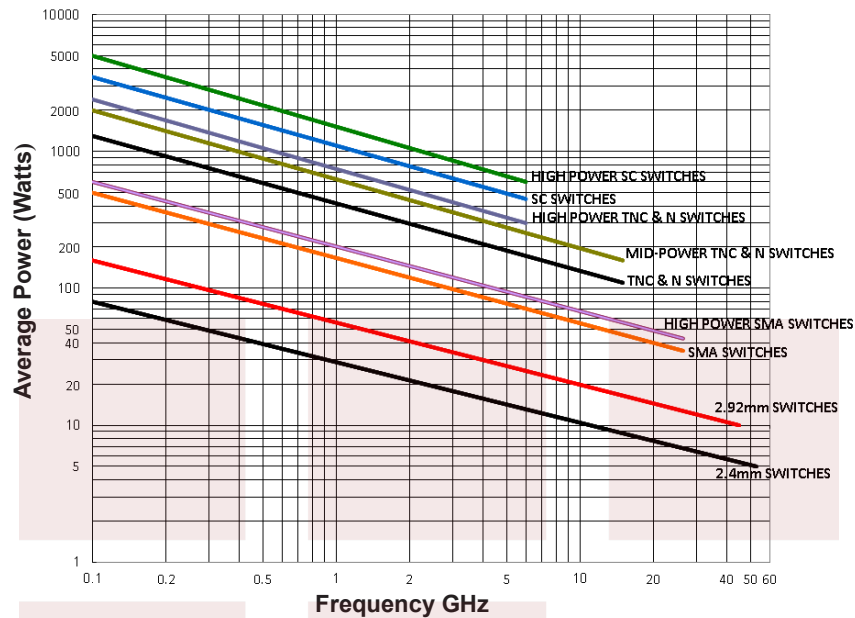
Notes:

### Typical Performance Data





### Power Handling vs. Frequency



### Power Handling De-rating vs. Load VSWR



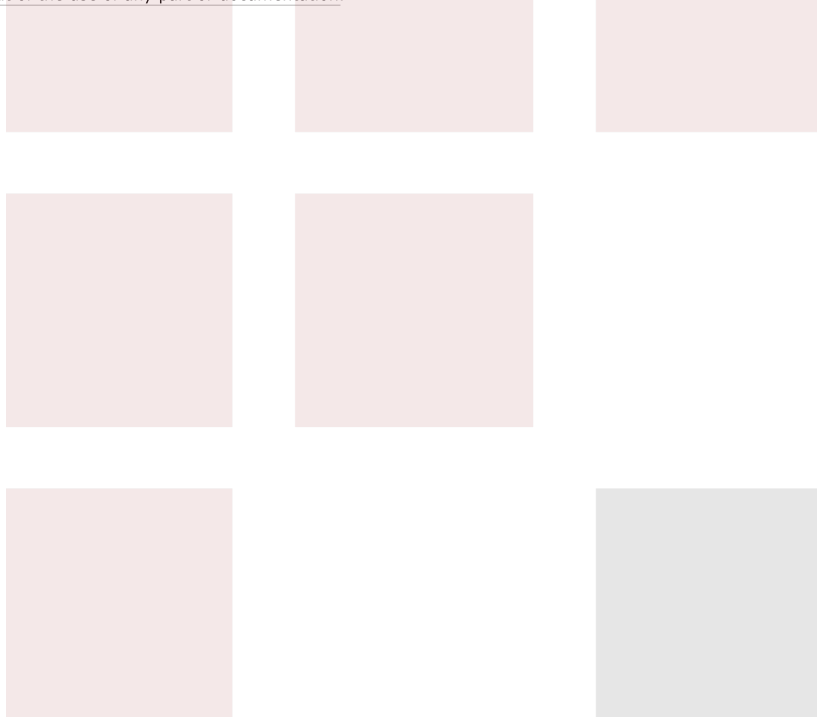
Power Handling Chart and Derating Curves based on the following Test and Environmental Conditions:  
Ambient temperature: 20-25°C  
Altitude: Sea Level to 1,000 feet  
Relative Humidity: 50-55%  
Load VSWR:  $\leq 1.20:1$   
Operation: Cold Switching

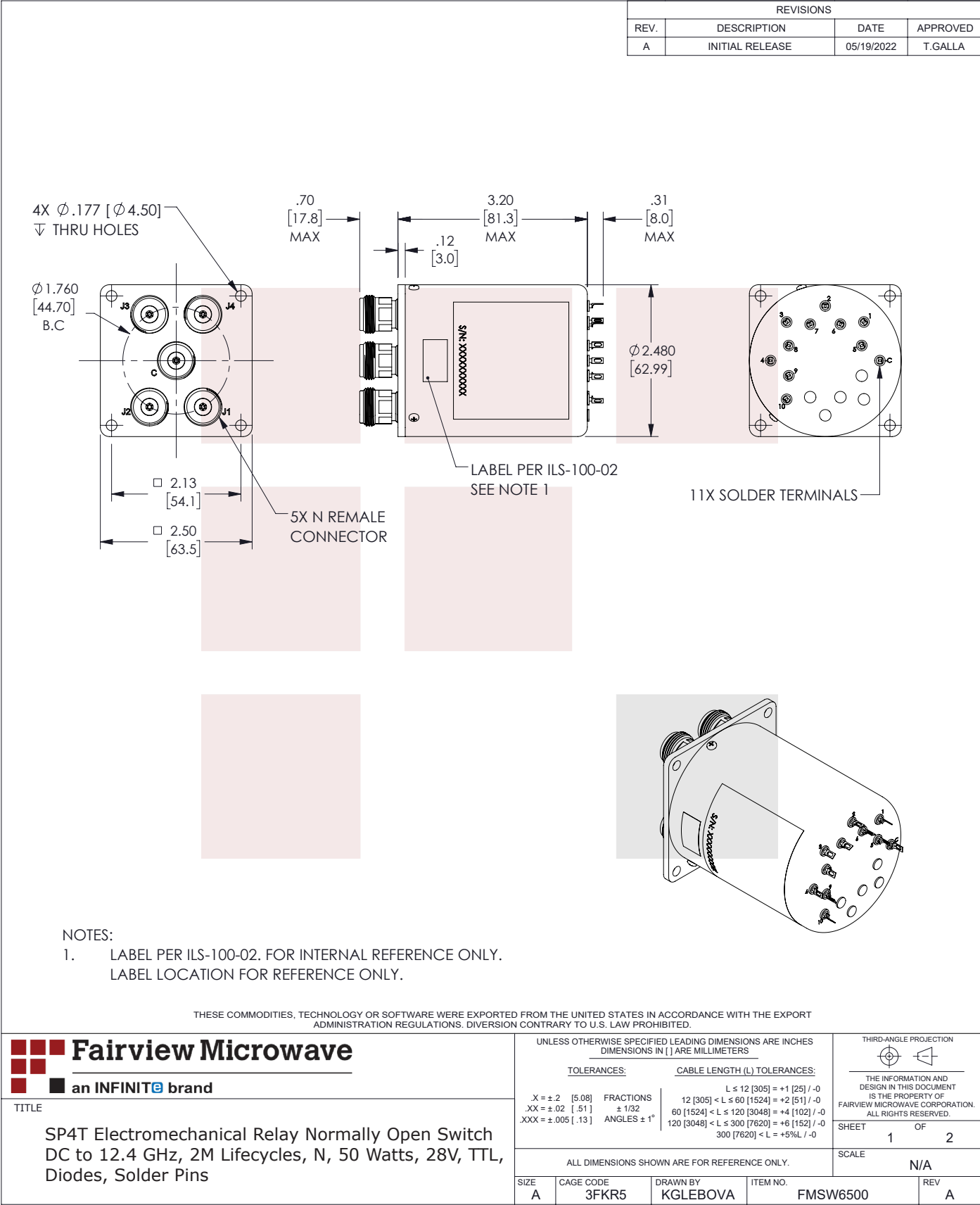
SP4T Electromechanical Relay Normally Open Switch DC to 12.4 GHz, 2M Lifecycles, N, 50 Watts, 28V, TTL, Diodes, Solder Pins from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [SP4T Electromechanical Relay Normally Open Switch DC to 12.4 GHz, 2M Lifecycles, N, 50 Watts, 28V, TTL, Diodes, Solder Pins FMSW6500](#)

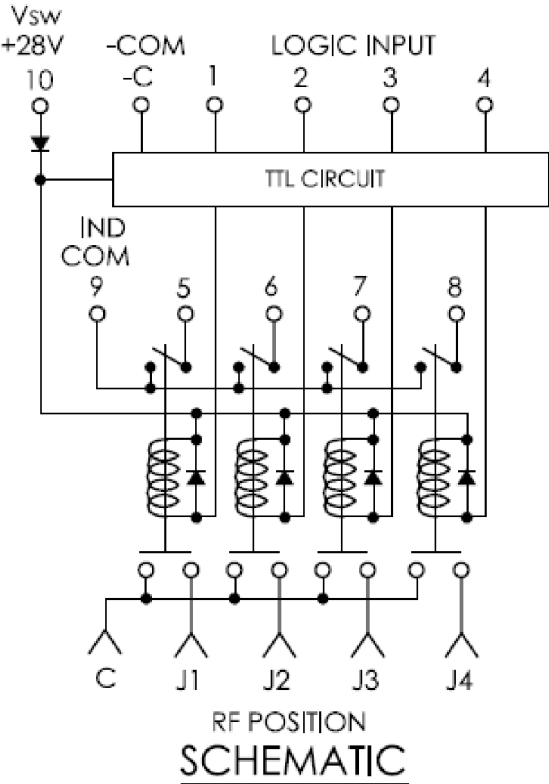
URL: <https://www.fairviewmicrowave.com/sp4t-normally-open-12.4-ghz-electro-mechanical-relay-switch-50w-28v-n-fmsw6500-p.aspx>

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T-Rev.D



TRUTH TABLE/PIN ASSIGNMENT :  
PIN ASSIGNMENT

TERMINALS LOGIC INPUT PINS	RF PATH				INDICATOR			
	J1	J2	J3	J4	5	6	7	8
1 ("1")	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
2 ("1")	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
3 ("1")	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF
4 ("1")	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON

PIN -C, -COM  
PIN 10, Vsw +28V  
PIN 9, IND COM

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