



WR112 SPDT/DPDT Failsafe, X Band Waveguide Electromechanical Relay Switch, 7.05 GHz to 10 GHz, 7 kW, CPR-Flat, TTL, 28V

Waveguide Electromechanical Relay Switches Technical

PEWGS6071

Features

- 7.05 to 10 GHz SPDT Waveguide Switch
- Optional DPDT Configuration
- WR112 Waveguide with CPR Flat Flanges
- Failsafe Actuator and Position Indicator
- Insertion Loss: 0.04 dB typ
- Isolation: 88 dB typ
- Switching Time: <100 msec typ
- +28 Vdc Nominal Voltage
- Input Power Rating up to 7 kW CW max
- Unpressurized Peak Power Rating up to 202 kW
- Manual Override Access
- Fully Weatherized Package
- Quick Connect Circular DC Connector with Mate
- -40°C to +85°C Operating Temperature

Applications

- Electronic Warfare
- Electronic Countermeasures
- Microwave Radio
- VSAT
- Radar
- Space Systems
- Test Instrumentation
- Research and Development

Description

The PEWGS6071 WR112 waveguide electromechanical switch operates across a wide frequency range from 7.05 to 10 GHz and is configured for single pole double throw (SPDT) operation. A shorting plate on port 3 can be removed for optional double pole double throw (DPDT) operation. This innovative design features a failsafe actuator with TTL logic control, and a patented motor drive with arc suppression. The motor drive housing supports a viewable position indicator window and a cover that can be removed for manual override access. Impressive performance includes 0.04 dB insertion loss, 88 dB Isolation and 1.07:1 VSWR. The design operates across a temperature range of -40°C to +85°C, requires +28Vdc nominal bias voltage, and has an input power rating of up to 7 kW CW maximum, and an unpressurized peak power rating up to 202 kW. Operating life of 250K cycles minimum. The waveguide ports have CPR Flat flanges. The rugged package design is fully weatherized for up to 100% humidity exposure and supports a quick connect circular 6 pin MIL-SPEC DC bias connector with mate included.

Electrical Specifications

Switch Type	SPDT/DPDT
Actuator Type	Failsafe
Actuator Options	TTL Logic, Window Indicator, Manual Override
TTL Control	on: 2.4 to 5.5 Volts
	off: 0 to 0.8 Volts
	5 mA at 5.5 Volts
	5 mA at 0.8 Volts
TTL Control Current	

Description	Minimum	Typical	Maximum	Units
Frequency Range	7.05		10	GHz
Impedance		50		Ohms
Operating Voltage	25.2	28	30.8	Volts
Actuating Current @ 28 Volts		140	150	mA
VSWR		1.07:1	1.1:1	
Insertion Loss		0.04	0.05	dB
Isolation	80	88		dB
Switching Time		<100		ms

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Input Power (CW)	7	kWatts
Input Power (Peak/Unpressurized)	202	kWatts

Electrical Specification Notes:

Active logic switch command duration must be maintained to keep switch in energized position.

Maximum switching rate not to exceed 30 per minute

Mechanical Specifications

Size

Length	2.25 in [57.15 mm]
Width/Diameter	2.43 in [61.72 mm]
Height	4.85 in [123.19 mm]
Weight	1.45 lbs [657.71 g]

Operating Life

250,000 Cycles

Operating Pressure

30 psig

Configuration

Waveguide Size

WR-112

Flange Type

CPR Flat

Body Material and Plating

Aluminum, Black

Body Plating Specification

MIL-DTL-5541

Environmental Specifications

Temperature

Operating Range

-40 to +85 deg C

Storage Range

-55 to +100 deg C

Humidity

0 to 100% Fully Weatherized IAW IP67

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

Plotted and Other Data

Notes:

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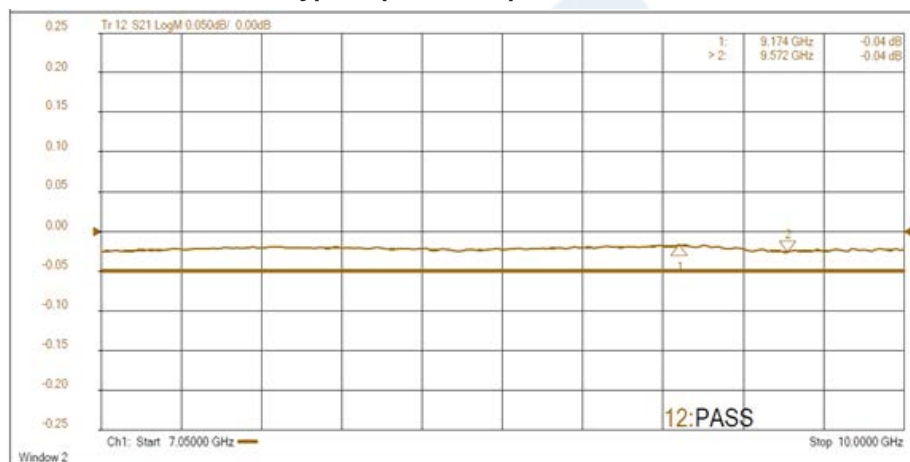


Waveguide Electromechanical Relay Switches Technical

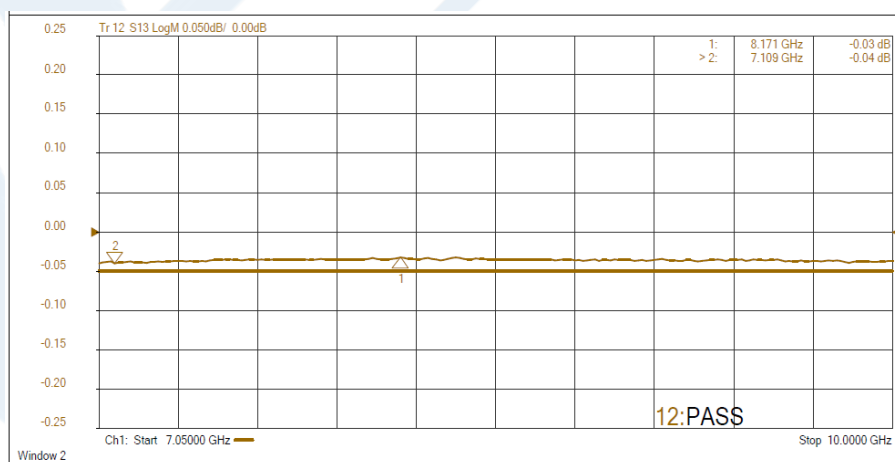
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Typical Performance Data

Typical (Position 1) Insertion Loss



Typical (Position 2) Insertion Loss



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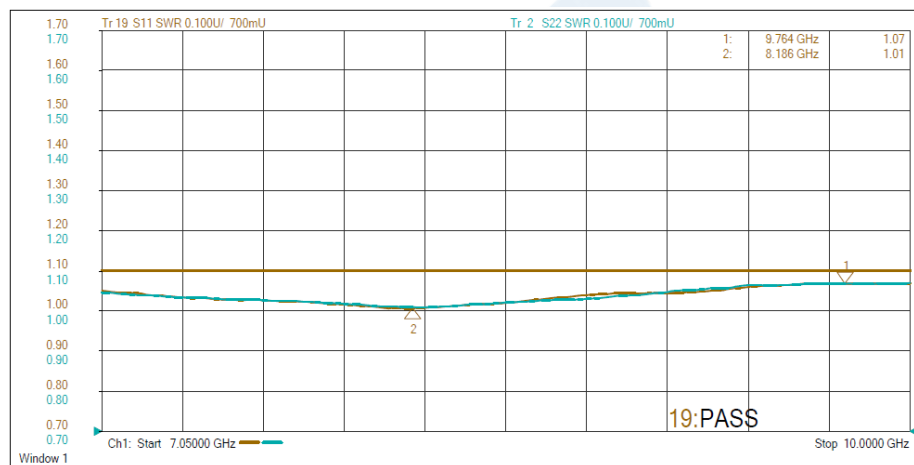
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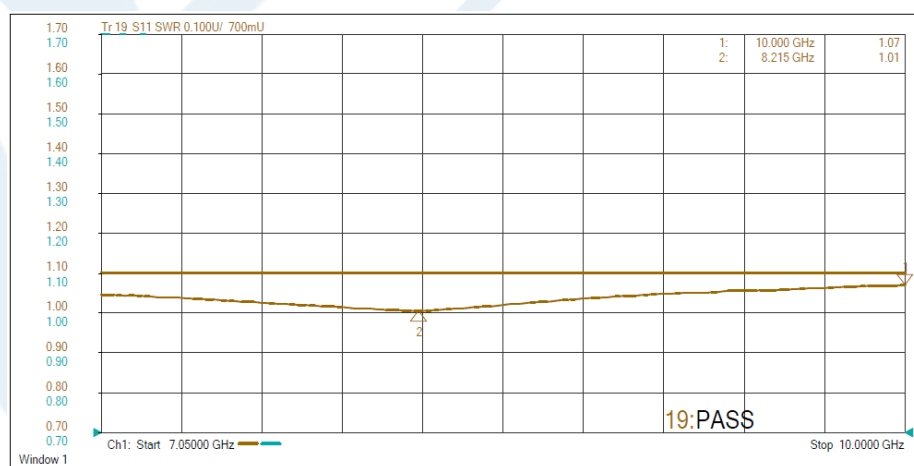
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**Typical (Position 1)
VSWR**



**Typical (Position 2)
VSWR**



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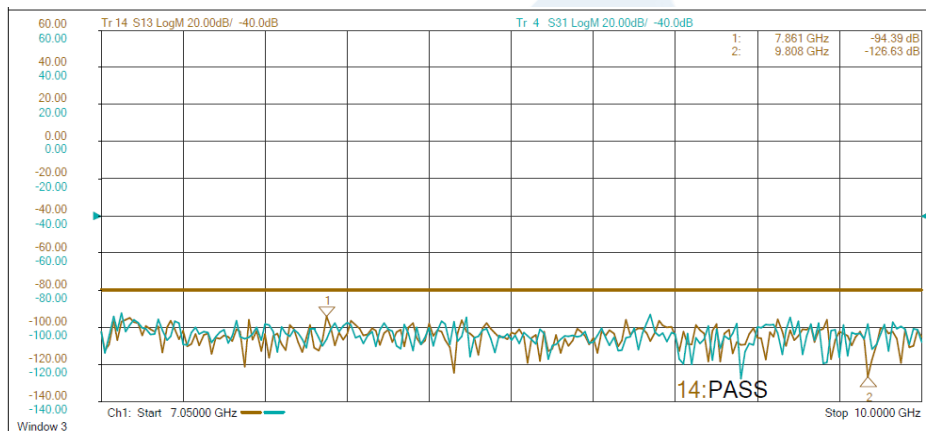
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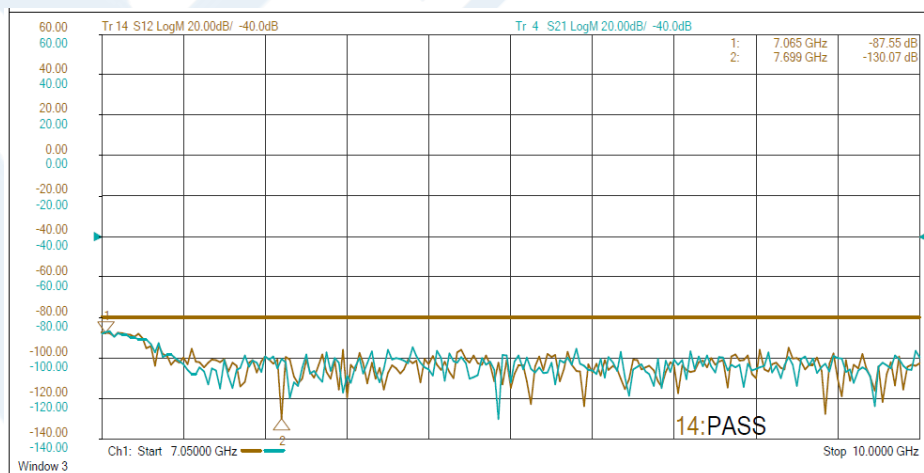
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Typical (Position 1) Isolation



Typical (Position 2) Isolation



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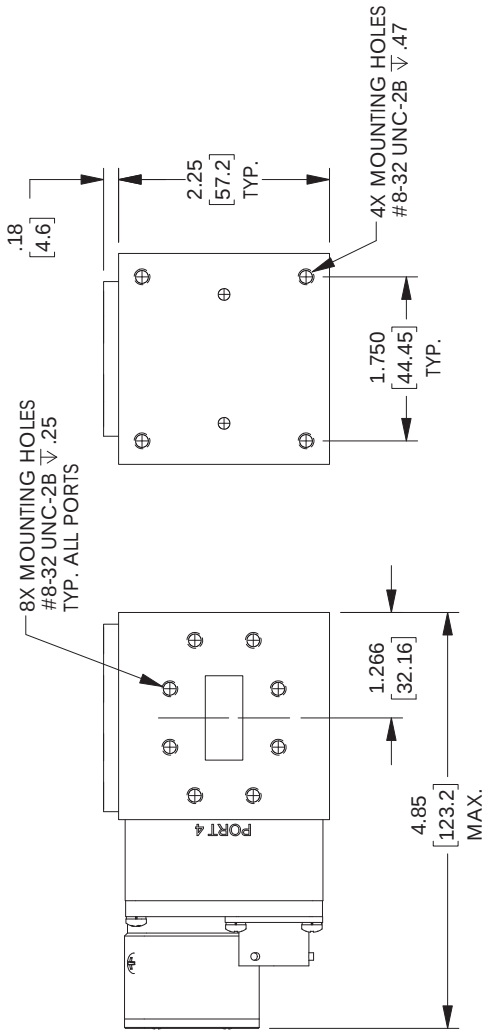
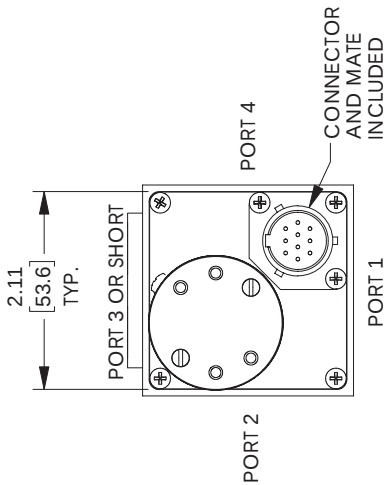
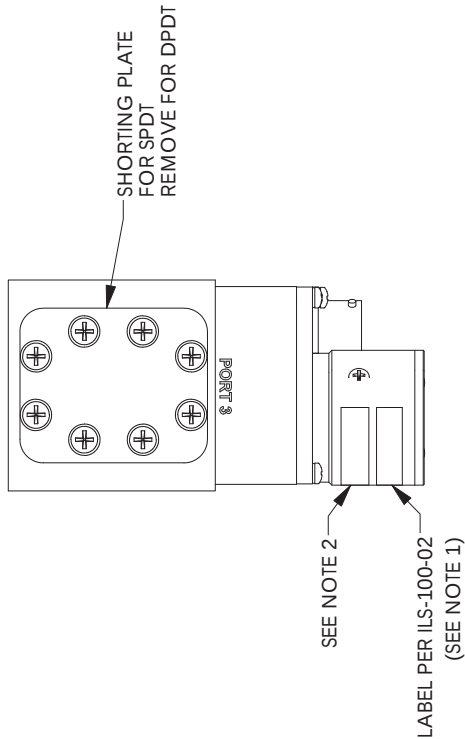
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PEWGS6071 CAD Drawing

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Relay Switch, 7.05 GHz to 10 GHz,7 kW, CPR-Flat, TTL, 28V

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	03/26/2021	TGALLA



UNLESS OTHERWISE SPECIFIED
LEADING DIMENSIONS ARE INCHES
DIMENSIONS IN [] ARE MILLIMETERS

TOLERANCES:

X = +.2	[5.08]	FRACTIONS
XX = +.02	[.51]	+1/32
XXX = ±.005	[.13]	ANGLES ± 1°

CABLE LENGTH (L) TOLERANCES:

L ≤ 12 [305]	= +1 [25] / -0
12 [305] < L ≤ 60 [1524]	= +2 [51] / -0
60 [1524] < L ≤ 120 [3048]	= +4 [102] / -0
120 [3048] < L ≤ 300 [7620]	= +6 [152] / -0
300 [7620] < L	= +9% / -0

ALL DIMENSIONS SHOWN
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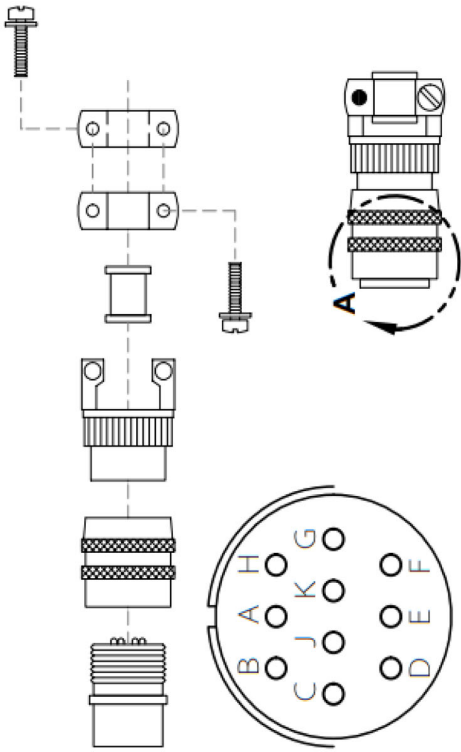
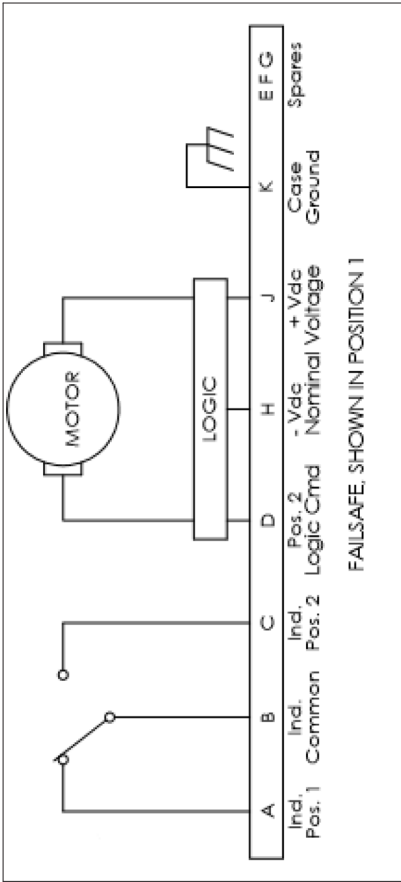
REV A

- NOTES:
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 2. SERIAL NUMBER AND DATE CODE ARE COMBINED. EX: 2020040500001

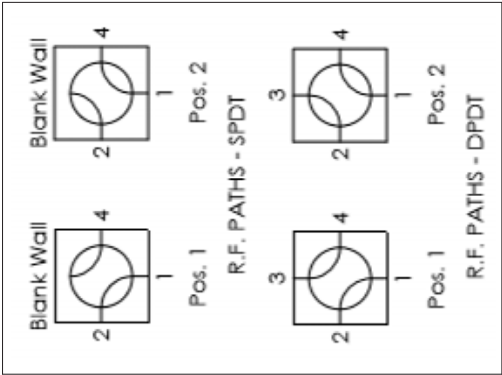
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View A



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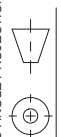
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