DP3T and Terminated SPDT up to 40 GHz

SMA - SMA 2.9

Radiall's RAMSES DP3T and Terminated SPDT switches offer excellent reliability, high performance and operating frequencies from DC to 40 GHz. A full range of options are available within the RAMSES range in order to offer customers a complete solution.

These relays are dedicated to market applications including: defense, instrumentation and telecommunication.

Example of P/N:
R585423300 is a SPDT terminated SMA 18GHz, failsafe, 28Vdc, indicator contacts, internal terminations without TTL drivers and solder pins.

PART NUMBER SELECTION

R 585

RF Connectors:
3: SMA up to 3 GHz
4: SMA up to 18 GHz
F: SMA up to 26.5 GHz
8: SMA 2.9 up to 40 GHz (4) (5)

Type:
1: Failsafe
2: Failsafe + I.C.
3: Latching
4: Latching + I.C.
5: Latching + S.C.O. (1)
6: Latching + S.C.O + I.C. (1)
7: Normally open
8: Normally open + I.C.

Actuator Voltage:
2: 12 Vdc
3: 28 Vdc

Actuator Terminals:
0: Solder pins

Options:
0: Without option
1: Positive common (2) (3)
3: With suppression diodes (1)
4: With suppression diodes and positive common (1) (2) (3)

Switch Model:
0: DP3T without TTL Driver (DP3T)
1: DP3T with TTL Driver (DP3T) (high level) (1) (2)
2: SPDT terminated without TTL Driver / (internal termination)
3: SPDT terminated with TTL Driver / (high level) (1) (2) / (internal termination)
4: SPDT terminated with TTL Driver / (external termination)
5: SPDT terminated with TTL Driver / (high level) (1) (2) / (external termination)
6: Terminated 4 ports bypass no option (external terminations)
7: Terminated 4 ports bypass with TTl Driver (external termination)

I.C.: Indicator contact/S.C.O.: Self Cut-Off

(1): Suppression diodes are already included in Self Cut-OFF & TTL option

(2): Polarity is not relevant to application for switches with TTL driver

(3): Positive common shall be specified only with type 3, 4, 5, 6, 7 & 8 because failsafe switches can be used with both polarities

(4): Not available with switch model "2" & "3"

(5): Connector SMA 2.9 is equivalent to "K connector®", registered trademark of Anritsu

DP3T and Terminated SPDT up to 40 GHz

SMA - SMA 2.9

GENERAL SPECIFICATIONS

Operating mode		Failsafe		Latching		Normally open	
Nominal operating voltage (across operating temperature)	Vdc	12	28	12	28	12	28
		(10.2 to 13)	(24 to 30)	(10.2 to 13)	(24 to 32)	(10.2 to13)	(24 to 32)
Coil resistance (+/-10%)	Ω	24	138	29	175	47.5	275
Nominal operating current at 23°C	mA	500	205	420	160	250	102
Average power		See Power Rating Chart page **1-13**					
		Internal terminations: 1 Watt CW into 50 Ohms					
TTL input		2.2 to 5.5 Volts 800µA max 5.5 Volts					
		0 to 0.8 Volts 20µA max 5.5 Volts					
Switching time (Max)		10					
Life (Min)		2 million cycles for products with internal terminations 10 million cycles for all other products					
Connectors		SMA - SMA 2.9					
Actuator terminals		Solder pins					
Operating temperature range		-40°C to +85°C					
Storage temperature range		-55°C to +85°C					
Vibration (MIL STD 202, Method 204D, cond.D)		10-2000 Hz, 20g		Operating			
Shock (MIL STD 202, Method 213B, cond.C)		100g / 11 ms, ½ sine		Operating			

RF PERFORMANCES

Connectors	Frequency range GHz		V.S.W.R. (max)	Insertion loss (max) dB	Isolation (min) dB	Impedance Ω
SMA	DC - 3 DC - 18 DC - 26.5	DC - 3	1.20	0.20	80	50
		3 - 8	1.30	0.30	70	
		8 - 12.4	1.40	0.40	60	
		12.4 - 18	1.50	0.50	60	
		18 - 26.5	1.70	0.70	55	
SMA 2.9	DC - 40	DC - 6	1.30	0.30	70	50
		6 - 12.4	1.40	0.40	60	
		12.4 - 18	1.50	0.50	60	
		18 - 26.5	1.70	0.70	55	
		26.5 - 40	1.90	0.80	50	

See page 3-4 for typical RF performances

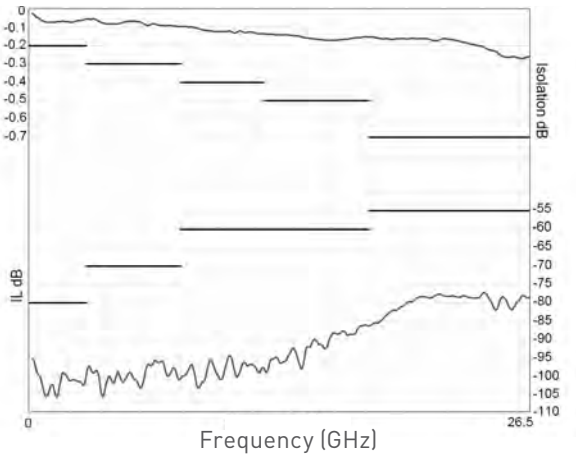
DP3T and Terminated SPDT up to 40 GHz

SMA - SMA 2.9

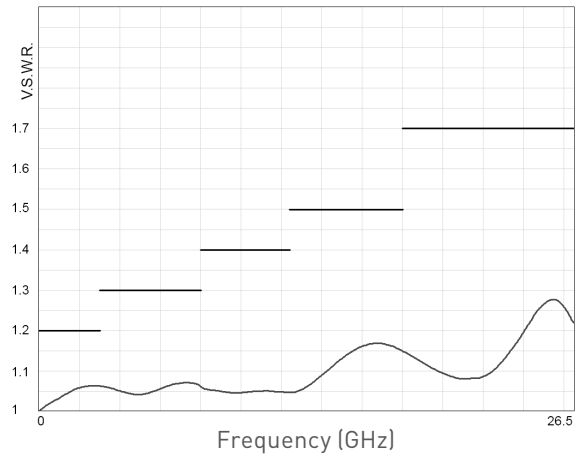
R585 TYPICAL RF PERFORMANCES

Example: DP3T SMA up to 26.5 GHz

Insertion Loss and Isolation

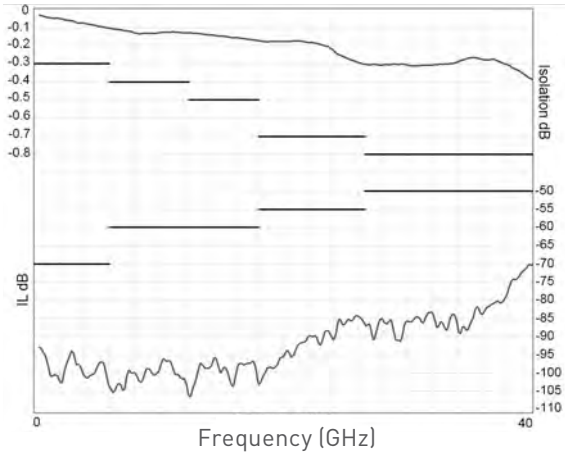


V.S.W.R.

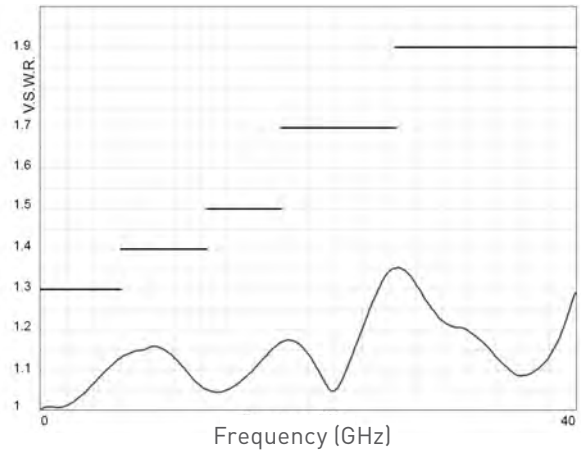


Example: DP3T SMA2.9 up to 40 GHz

Insertion Loss and Isolation

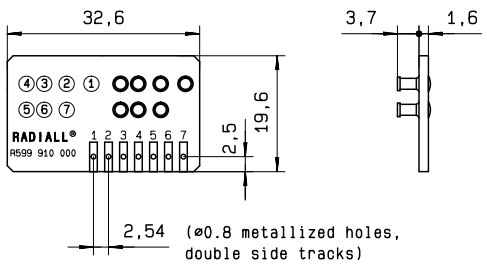


V.S.W.R.



ACCESSORIES

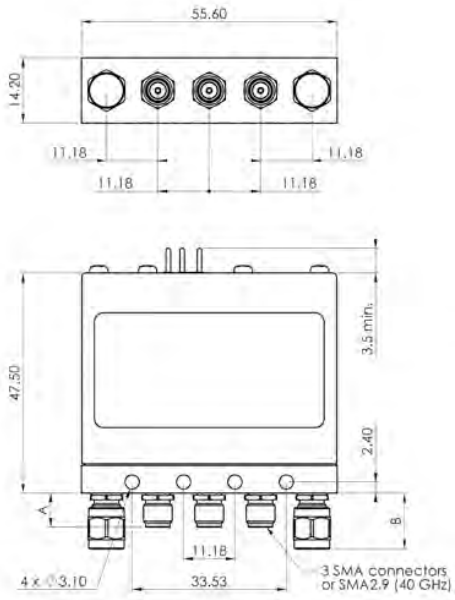
A printed circuit board interface connector (ordered separately) has been designed for easy mounting on terminals.
For DP3T model R585 series => Radiall part number: **R599910000**



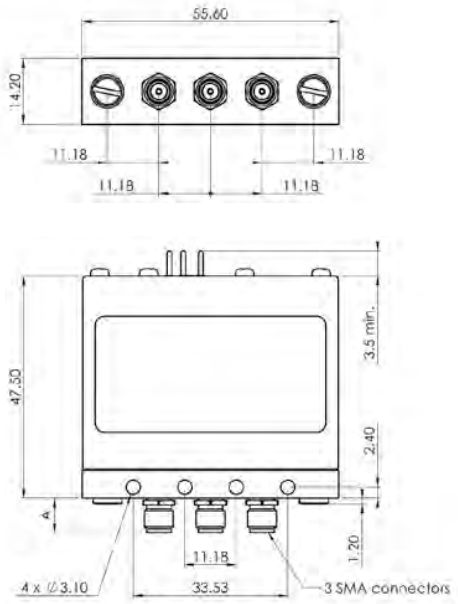
DP3T and Terminated SPDT up to 40 GHz

SMA - SMA 2.9

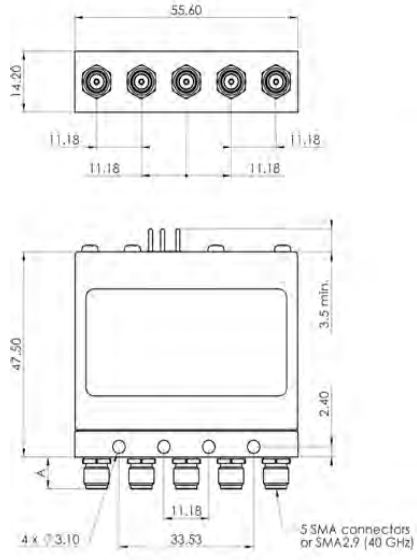
TYPICAL OUTLINE DRAWING



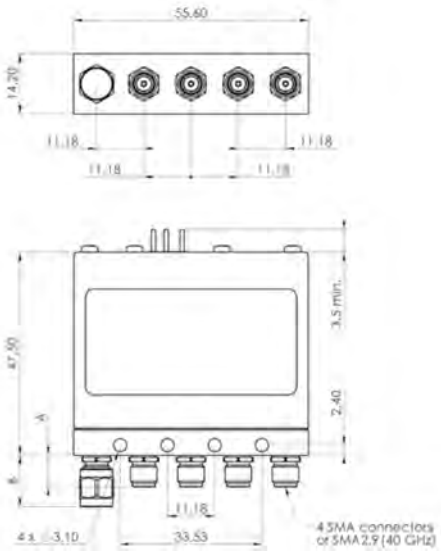
SPDT with external terminations
R585 --- 4--
R585 --- 5--



SPDT with internal terminations
R585 --- 2--
R585 --- 3--



DP3T
R585 --- 0--
R585 --- 1--



Terminated 4 ports BYPASS relay
R585 --- 6--
R585 --- 7--

See page 3-11 for pin indentification

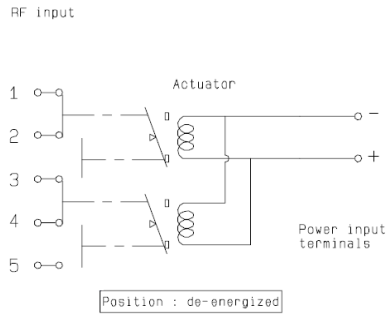
Connectors	A max (mm)	B max (mm) if applicable
SMA up to 18 GHz	7.4	13.5
SMA up to 26.5 GHz	7.4	21
SMA 2.9 up to 40 GHz	6.3	21

Coaxial DP3T & Terminated SPDT - Electrical Schematics

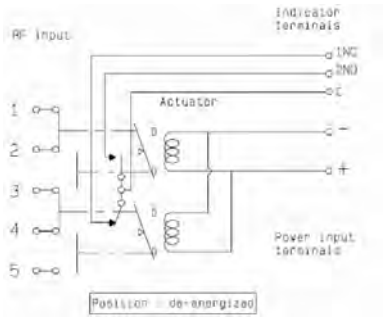
R585 Series

FAILSAFE

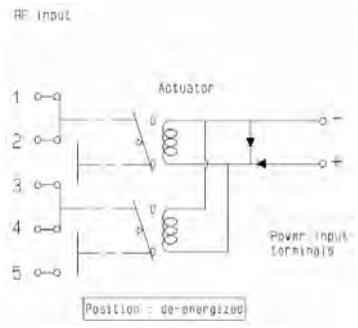
WITHOUT OPTION
R585 -1- 000 / R585 -1- 000 / R585 -1- 400



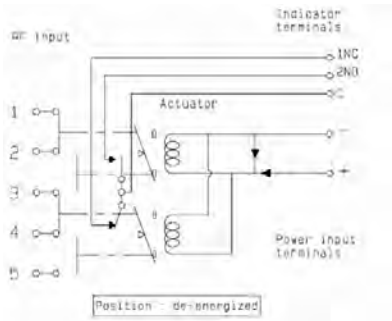
WITH INDICATOR CONTACT
R585 -2- 000 / R585 -2- 200 / R585 -2- 400



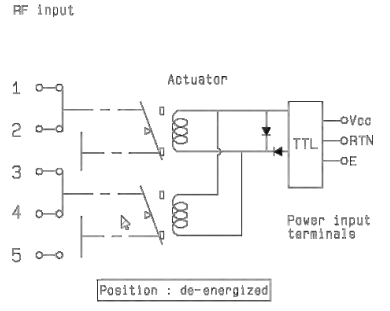
WITH SUPPRESSION DIODES
R585 -1- 030 / R585 -1- 230 / R585 -1- 430



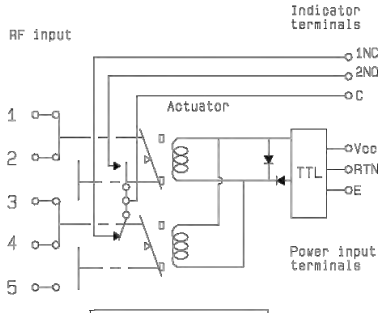
WITH SUPPRESSION DIODES AND INDICATOR CONTACT
R585 -2- 030 / R585 -2- 230 / R585 -2- 430



WITH TTL DRIVER
(supression diodes are included)
R585 -1- 000 / R585 -1- 300 / R585 -1- 500



WITH TTL DRIVER AND INDICATOR CONTACT
(supression diodes are included)
R585 -2- 000 / R585 -2- 300 / R585 -2- 500

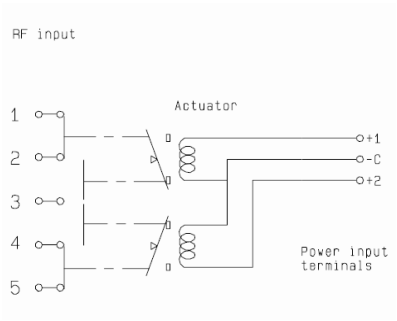


Coaxial DP3T & Terminated SPDT - Electrical Schematics

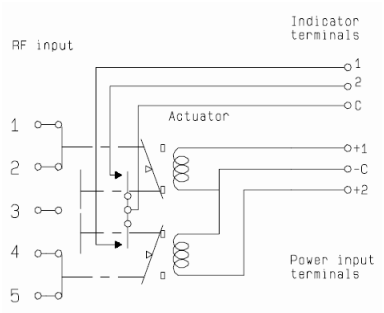
R585 Series

NORMALLY OPEN

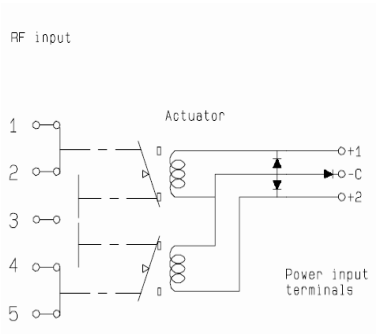
WITHOUT OPTION
R585 -7- 000 / R585 -7- 200 / R585 -7- 400



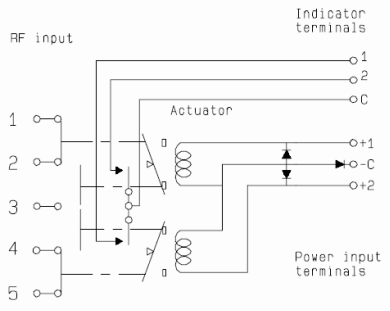
WITH INDICATOR CONTACT
R585 -8- 000 / R585 -8- 200 / R585 -8- 400



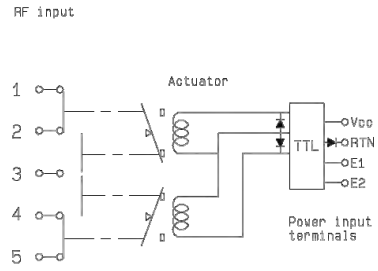
WITH SUPPRESSION DIODES
R585 -7- 030 / R585 -7- 230 / R585 -7- 430



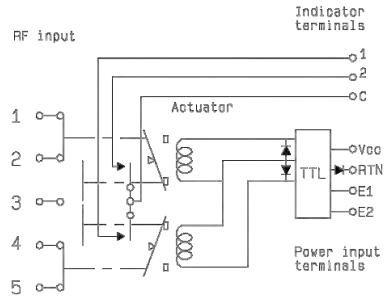
WITH SUPPRESSION DIODES AND INDICATOR CONTACT
R585 -8- 030 / R585 -8- 230 / R585 -8 - 430



WITH TTL DRIVER
(supression diodes are included)
R585 -7- 000 / R585 -7- 300 / R585 -7- 500



WITH TTL DRIVER AND INDICATOR CONTACT
(supression diodes are included)
R585 -8- 100 / R585 -8- 300 / R585 -8- 500

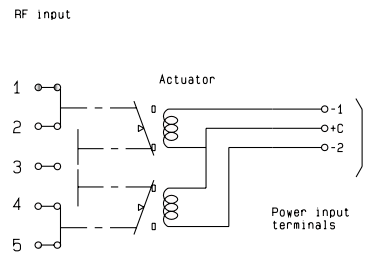


Coaxial DP3T & Terminated SPDT - Electrical Schematics

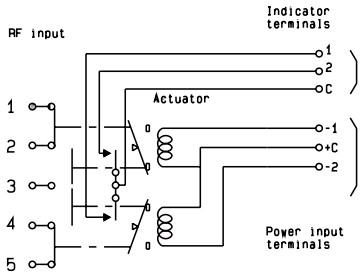
R585 Series

NORMALLY OPEN

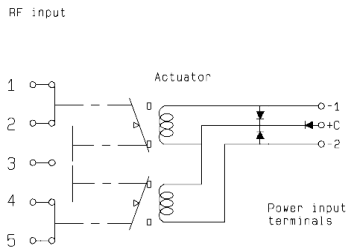
WITH POSITIVE COMMON, NO OPTION
R585 -7- 010 / R585 -7- 210 / R585 -7- 410



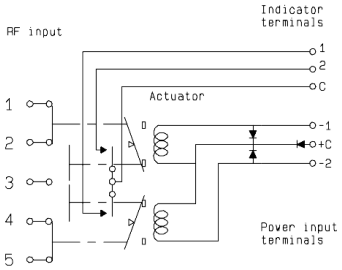
WITH POSITIVE COMMON AND INDICATOR CONTACT
R585 -8- 010 / R585 -8- 210 / R585 - 8 - 410



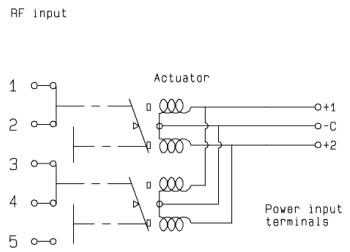
WITH POSITIVE COMMON AND SUPPRESSION DIODES
R585 -7- 040 / R585 -7- 240 / R585 -7- 440



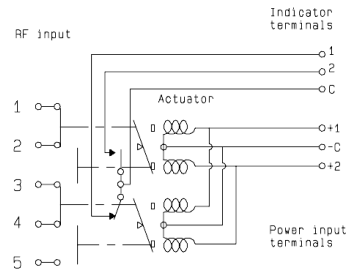
WITH POSITIVE COMMON, INDICATOR CONTACT AND SUPPRESSION DIODES
R585 -8- 040 / R585 -8- 240 / R585 -8- 44 0



WITHOUT OPTION
R585 -3- 000 / R585 -3- 200 / R585 -3- 400



WITH INDICATOR CONTACT
R585 -4- 000 / R585 -4- 200 / R585 -4- 400



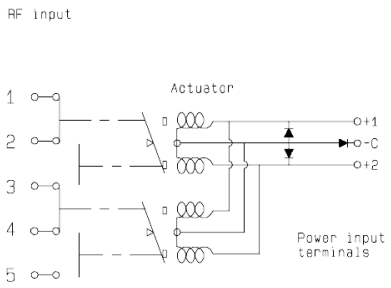
Coaxial DP3T & Terminated SPDT - Electrical Schematics

R585 Series

LATCHING

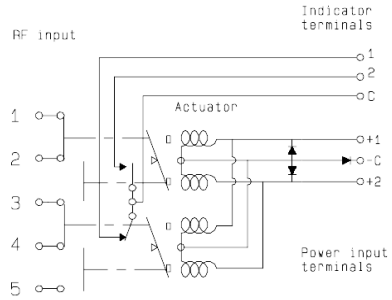
WITH SUPPRESSION DIODES

R585 -3- 030 / R585 -3- 230 / R585 -3- 430



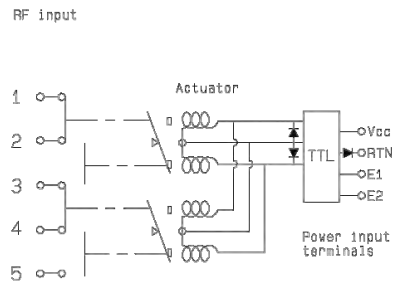
WITH SUPPRESSION DIODES AND INDICATOR CONTACT

R585 -4- 030 / R585 -4- 230 / R585 -4- 430



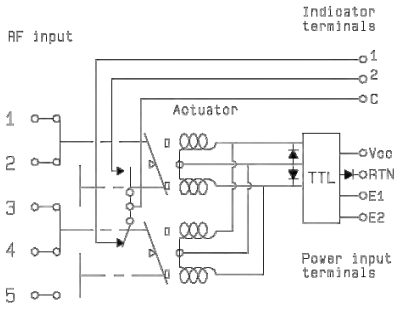
WITH TTL DRIVER
(suppression diodes are included)

R585 -3- 100 / R585 -3- 300 / R585 -3- 500



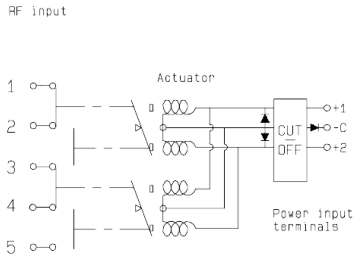
WITH TTL DRIVER AND INDICATOR CONTACT
(suppression diodes are included)

R585 -4- 100 / R585 -4- 300 / R585 -4- 500



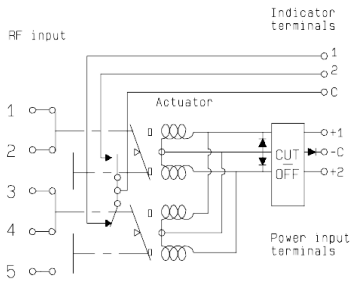
WITH CUT-OFF
(supression diodes are included)

R585 -5- 000 / R585 -5- 200 / R585 -5- 400



WITH CUT-OFF AND INDICATOR CONTACT
(supression diodes are included)

R585 -6- 000 / R585 -6- 200 / R585 -6- 400

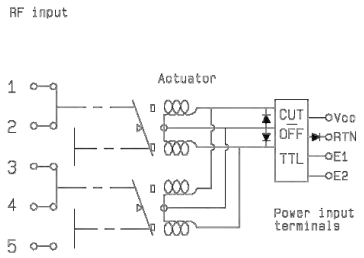


Coaxial DP3T & Terminated SPDT - Electrical Schematics

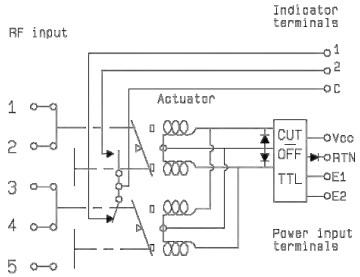
R585 Series

LATCHING

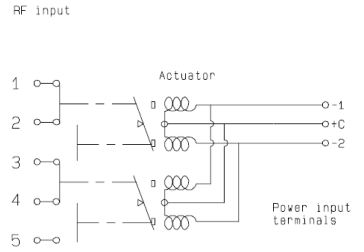
WITH CUT-OFF AND TTL DRIVER
(suppression diodes are included)
R585 -5- 100 / R585 -5- 300 / R585 -5- 500



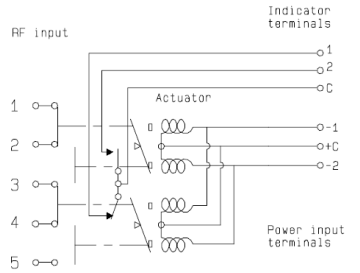
WITH CUT-OFF, TTL DRIVER AND INDICATOR CONTACT
(suppression diodes are included)
R585 -6- 100 / R585 -6- 300 / R585 -6- 500



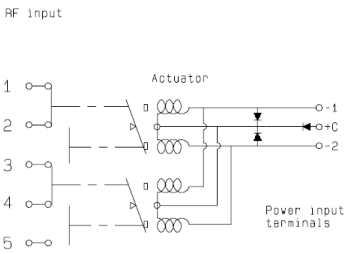
WITH POSITIVE COMMON, NO OPTION
R585 -3- 010 / R585 -3- 210 / R585 -3- 410



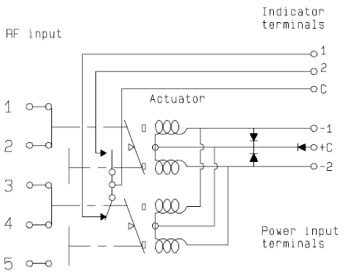
WITH POSITIVE COMMON AND INDICATOR CONTACT
R585 -4- 010 / R585 -4- 210 / R585 -4- 410



WITH POSITIVE COMMON AND SUPPRESSION DIODES
R585 -3- 040 / R585 -3- 240 / R585 -3- 440



WITH POSITIVE COMMON, SUPPRESSION DIODES AND INDICATOR CONTACT
R585 -4- 040 / R585 -4- 240 / R585 -4- 440

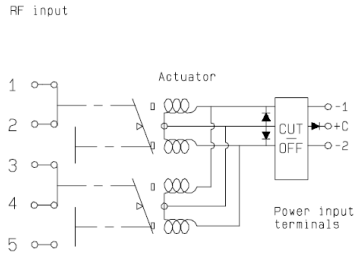


Coaxial DP3T & Terminated SPDT - Electrical Schematics

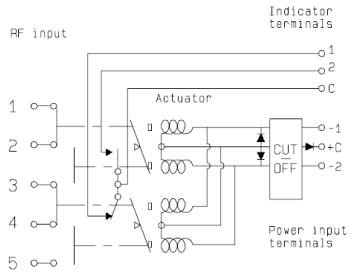
R585 Series

LATCHING

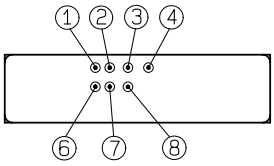
WITH POSITIVE COMMON AND CUT-OFF
(suppression diodes are included)
R585 -5- 010 / R585 -5- 210 / R585 -5- 410



WITH POSITIVE COMMON, CUT-OFF AND INDICATOR CONTACT
(suppression diodes are included)
R585 -6- 010 / R585 -6- 210 / R585 -6- 410



PIN IDENTIFICATION

Type	PIN						
	1	2	3	4	6	7	8
Failsafe	+		-				
Failsafe + I.C.	+		-		2NO	1NC	C
Failsafe + TTL	E		RTN	VCC			
Failsafe + I.C. + TTL	E		RTN	VCC	2N0	1NC	C
Latching Latching + Cut-off	-2 or +2	-1 or +1	+C or -C				
Latching + I.C. Latching + I.C. + Cut-off	-2 or +2	-1 or +1	+C or -C		2	1	C
Latching + TTL Latching + TTL + Cut-off	E2	E1	RTN	VCC			
Latching + TTL + I.C. Latching + TTL + I.C. Cut-off	E2	E1	RTN	VCC	2	1	C
Normally open	-2 or +2	-1 or +1	+C or -C				
Normally open + I.C.	-2 or +2	-1 or +1	+C or -C		2	1	C
Normally open + TTL	E2	E1	RTN	VCC			
Normally open + TTL + I.C.	E2	E1	RTN	VCC	2	1	C

BOTTOM VIEW