

COMBINATION SOLID STATE RELAY



PRODUCT DESCRIPTION

The NEXSYS® Combination Solid State Relay (SSRC) is a Series-C (8 Pin) component, designed to support countless signal switching applications for digital and analog circuits to allow for syncing, and sourcing power, as well as audio and databus switching.

The SSRC features four internally connected NEXSYS® Solid State Relays (SSR) for increased wiring efficiency and a variety of parallel switching combinations. This allows for synchronized Normally Opened (NO) and Normally Closed (NC) signal switching with input buffering, optical isolation, and surge-suppression. The SSRC's control bridge is bi-directional, which allows DC control voltages to be applied in either direction to provide design flexibility.

The SSRC is either packaged inside of a VIVISUN® switch/indicator housing or a NEXSYS® Module to create custom configurations that uniquely address specific application requirements. The NEXSYS® SSRC is designed and tested to both military performance standards (MIL-STD) and commercial environmental requirements (DO-160).

SIGNAL DESCRIPTION

Signals	Logic Functions Normally Open (1)*	Logic Function Normally Closed (2)**
A, B, C, and D	Shorted to Common A or B when the inputs (IN) are Active	Shorted to Common A or B when the inputs (IN) are not Active
Common	Signal Common A and B	
IN	Active when +28 VDC is applied across the inputs (IN)	

* 1 = Normally Open (NO) SSR ** 2 = Normally Closed (NC) SSR

PARAMETRIC TABLE

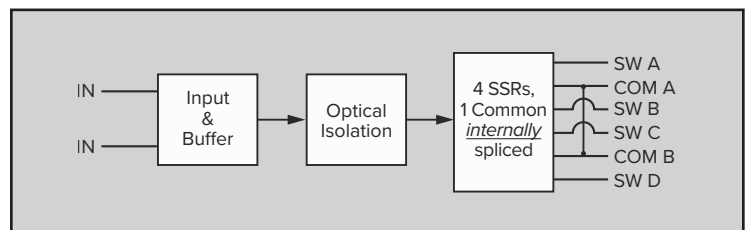
Description	Parameters	
Input/Output Parameters		
Max/Nom/Min Voltage On	32 VDC/28 VDC/18 VDC	
Voltage Off (Maximum)	4 VDC	
Maximum Output Voltage	+32 VDC or 28 VAC rms	
Output Load Capacity Tested to +85° C		
	Normally Open (1)	Normally Closed (2)
On Resistance	Typical 0.35 ohm AC/DC, Maximum 0.5 ohm	Typical 1.0 ohm AC/DC, Maximum 2.5 ohm
Resistive	0.75 A	0.25 A
Inductive	0.5 A (300 mH)	0.25 A (300 mH)
Lamp	0.1 A (1 A, 10 ms. inrush)	N/A
Audio	<600 ohms	

PRODUCT SPECIFICATIONS

The NEXSYS® Combination Solid State Relay comes in three switching options with multiple combinations of Normally Open (NO) and Normally Closed (NC) relays. The most common configurations are listed below. Contact sales to specify a configuration that is not shown.

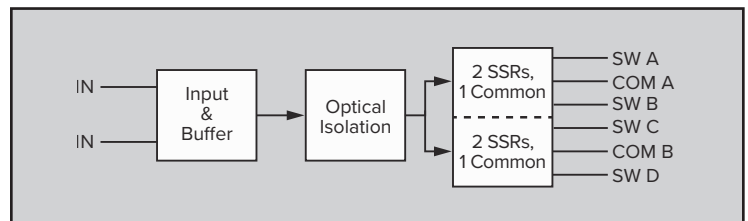
- **Four Relay Single Common:** Four (4) SPST contacts, configured with a single, internally spliced common

Configuration (SSRCH/ABCD)	Common A & B, <i>internally spliced</i>
SSRCH/1111	4 NO SSRs
SSRCH/2222	4 NC SSRs
SSRCH/1122	2 NO and 2 NC SSRs, grouped
SSRCH/1212	2 NO and 2 NC SSRs, collated



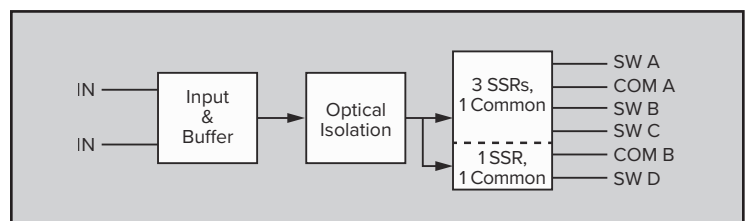
- **Dual Relay Pair:** Four (4) SPST contacts (two pairs), configured with a single, internally spliced common per pair

Configuration (SSRCH/AB/CD)	Common A	Common B
SSRCH/11/11	2 NO SSRs	2 NO SSRs
SSRCH/11/22	2 NO SSRs	2 NC SSRs
SSRCH/12/12	1 NO, 1 NC SSR	1 NO, 1 NC SSR
SSRCH/22/22	2 NC SSRs	2 NC SSRs



- **Three Relay Single Common, One Relay Single Common:** Three (3) SPST contacts configured with a single, internally spliced common and one (1) SPST contact, configured with a single, internally spliced common

Configuration (SSRCH/ABC/D)	Common A	Common B
SSRCH/111/2	3 NO SSRs	1 NC SSR
SSRCH/222/1	3 NC SSRs	1 NO SSR



QUALIFICATION LEVEL SUMMARY

Test Description	Specification	Section	Category	Reference Levels
Altitude	RTCA/DO-160 MIL-STD-202 MIL-STD-810	4 105C 500	F2 B Procedure II	-15,000 feet, +55,000 feet
Temperature	RTCA/DO-160 MIL-STD-810	4 501/502	F2 Procedure II	-55°C and +85°C (Illuminated Indicator rated at +71°C)
Temperature Variation	RTCA/DO-160 MIL-STD-202 MIL-STD-810	5 107 503	S2 A Procedure I-C	5 cycles -55°C /+85°C
High Temperature Survival (Non-operating)	MIL-STD-202	108A	A	+85°C, 96 hours (Switch or Module) +125°C, 96 hours (Electronic Unit only)
Humidity	RTCA/DO-160 MIL-STD-202 MIL-STD-810	6 106 507	B - Procedure II	240 hours, +65°C, > 90% RH
Operational Shock and Crash Safety	RTCA/DO-160 MIL-STD-202 MIL-STD-810	7 213 516	B B -	20 G Sawtooth, 75 G Half-Sine 20 G Acceleration
Acceleration	RTCA/DO-160 MIL-STD-202 MIL-STD-810	7 212 513	B A Procedure III	20 G, 3 axis, Sinusoidal Equivalent
Vibration	RTCA/DO-160 MIL-STD-202	8 204	R,U B	10-2,000 Hz, 10 G 10-2,000 Hz, 15 G
Explosive Atmosphere	RTCA/DO-160 MIL-STD-202	9 109	E -	
Waterproofness	RTCA/DO-160 RTCA/DO-160 MIL-PRF-22885	10 10 4.7.20	R Y/W -	Applies to Sealed Switches only Applies to NEXSYS Module only Applies to Sealed Switches only
Sand and Dust	RTCA/DO-160 MIL-STD-202	12 110A	D -	Applies to both Sealed Switches and NEXSYS Module
Fungus Resistance	RTCA/DO-160 MIL-PRF-22885	13 3.5.2	F -	Compliance by material selection
Salt Fog	RTCA/DO-160 MIL-STD-202	14 101E	T A	96 hour test
Magnetic Effect	RTCA/DO-160	15	Z	1° deflection, < 0.3 m
Power Input	RTCA/DO-160 RTCA/DO-160 MIL-STD-704	16.6 and 16.7 16.6.1.3 -	A and B A -	Momentary Power Loss 200 ms minimum
Spike/Transient	RTCA/DO-160 MIL-STD-461	17 CS115	A -	Power, 600 V, 10 us, 50 ohm 30 ns, 5 amp
Audio Frequency Conducted Susceptibility	RTCA/DO-160 MIL-STD-461	18 CS101	Z Curve 2	Power Input, 4 V P-P, 0.01 - 150 KHz 126 dBuV, 30 Hz to 150 KHz
Induced Signal Susceptibility	RTCA/DO-160	19	CW	10,000 V/m, 120 A/m, 350 - 800 Hz
RF Conducted Susceptibility *	RTCA/DO-160 MIL-STD-461	20 CS114	Y Curve 5	300 mA, 10 KHz - 400 MHz 109 dBuA, 10 KHz - 200 MHz
RF Radiated Susceptibility *	RTCA/DO-160 MIL-STD-461	20 RS103	Y 200 V/m	200 V/m, 2 MHz - 18 GHz
Conducted RF Emissions	RTCA/DO-160 MIL-STD-461	21 CE102	P -	150 KHz to 152 MHz 10 KHz to 10 MHz
Radiated RF Emissions	RTCA/DO-160 MIL-STD-461	21 RE102	P -	100 MHz-6 GHz 10 KHz-6 GHz
Lightning Induced Transient *	RTCA/DO-160 RTCA/DO-160 MIL-STD-461	22 22 CS116	B3K3L3 B3K3L3 -	Waveform 3, 600 V, 1 MHz, 10 MHz Waveform 5 A, 300 V, 120 us Damped Sinusoidal, 10 KHz - 100 MHz
Dielectric Withstanding	MIL-STD-202	301	-	1,000 VAC
Electrostatic Discharge	RTCA/DO-160 MIL-STD-461	25 CS118	- Level 4	15,000 V, 150 pf, 330 ohms

* Stated EMC performance based on tests performed on an individually monitored component using unshielded cables as defined by the applicable EMC test document. The EMC performance of an installed system using NEXSYS components can be dependent on the actual installation environment and interconnection method.

For more information: