Customer:

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No. SW065100A

Date: 2006 - 07 - 20

ALPS EUROPE DISTRIBUTION

Attention:

Your ref. No. :

Your Part No. : SPUN191400

SPECIFICATION

ALPS';

MODEL: SPUN191400

Spec. No. :SPUN-S-501

Sample No.: F3289849M

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	SPUN-S-501	SPUN PRODUCT SPECIFICATIONS	•••	\$
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	General 1 Application This 2 Operating temperat 3 Test conditions Appearance, construct 1 Appearance Svite 2 Construction and c 3 Harkings Per inc Rating <u>30</u> V I	a specification is applied to low current circuit (Secondary circuit) put ture range : $-10 \sim 60^{\circ}$ The standard test conditions shall be 5~35°C in temperature, 45~85% Ri atmospheric pressure. Should any doubt arise in judgement, tests shall i 86~108kPa {880~1080km}} tion and dimensions th shall have good finishing, and shall have no rust, crack or plating fa dimensions Per Individual product drawing dividual product drawing NC <u>0.1</u> A (Resistive load) Δ Minimum rating / VDC 10µA	sh switch used d and 88~106k a conducted a d lures.	l for electronic oqu Pa (860-1090ebor)(t 20±2°C, 65±5% Bi
4.	<u>Blectrical performan</u> I Items	Cê		Caltonica
4.1	Contact resistance	Shall be measured at 1kHz ± 200Hz (20mV MAX . 50mA MAX) or 1A, 5V DC	<u>20</u> ∎Ω H	AX
4.2	Insulation resistance	by voltage drop method. Test voltage : 500 V DC, measured after 1 minute±5 seconds. Applied position : Between all terminals	<u>100 hg n</u>	IN
		Between terminals and ground (frame)		
4.3	voltage proof	Test voltage : <u>5000</u> V AC (50~60Nz, cut-off current 2 mA) Applied position : Between all terminals Between terpinals and ground (frame)	No dielectr	ic breakdown shall o
4.4	Capacitance	Shall be measured at 1NHz ± 10kHz Botween all terminals Botween terminals end ground (frame)	<u>1.5</u> pF HA	K
4.5	Changeover tising		As per indiv	vidual product dravi
5. J	lechanical performant	28		
51	Itens	Test conditions		Criterion
5.2	Terminal strength	direction. A static load of 5.8 (-510-sf)/shall be applied to the tip of	As per indiv	a from terminal loss
		terminal in a desired direction for 1 minuto. The number of test shall be once per terminal.	and damage a holding port after test, requirement be satisfied	and breakage of tormain form. Terminals may be electrical performant specified in itom 4 b.
5.3	Nounting strength	Thread shall be mounted at 0.7 Hon 47-14 kef-cat by normal	Shall be fre	e from damage of the
5.4	Control strength 5.4.1 Control strength	 (1) A static load of <u>50 H = 5.1 kmfM</u> shall be applied in the operating direction of actuator for 15 seconds. (2) A static load of <u>50 H = 5.1 kmfM</u> shall be applied in the pull direction of actuator for 15 seconds. (For construction with lock, the test shall be conducted at the condition of lock released.) (3) A-static load of <u>30 H = 5.0 kmfM</u> shall be applied to the vertical direction of accuration at the tip of actuator for 15 seconds. 	Shall be fre bending and	e from pronounced w mechanical abnormal
	5.4.2 Lock hold- ing strength of actuator (Applied to the switch with lock	 (1) A static load of <u>10 H 4-62-km2/2</u>shall be applied in the pull direction at the condition of locking actuator. 	Lock shall n Shall be fre and mbnormal	ot be dislocated. 9 from pronounced we itles in operation.
5.5	Vobble of actuator	Run-out(P-P) shall be measured by applying a static load of 1N (102sf)	R-P : 0.8	BB HAX
5.6	Row of actuator (Applied to multipul-key push switch)	In the vertical direction of operation at the tip of actuator. Switch shall be mounted as shown. Difference of sides shall be measured. Hole for mounting frame Hole for mounting frame	Without fra Difference b t: = Vithi Maximum diffe t: = Within Difference b actuator t: = Within	me:1.2mm_MAX_ atveen actuators n_0.5 n_0.8 atveen mounting hole n_0.5m
-	SI	μ]	'93	:

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		A PROMICE SPECIFICATIONS	
	Items	Test conditions	Criterion
	Nounting frame strength (Applied to sulti pul-key push switch)	Both ends of mounting frame shall be secured. A static load of <u>30 H 13.05 kmf2</u> chall be applied to the center of mounting frame in A, B, C and D directions each 15 seconds. C.	Verp on mounting frame shall h max. Shall be free from abnors in operation.
		Fixed Fixed	
·		D	
5.8	Vibration	Switch shall be secured to a testing machine by a regular mounting device and mathod. (1) Vibration frequency range : 10~55Hz (2) Total amplitude : 1.5am (3) Sweep ratio : 10-55-10(Hz) Approx. 1 minute (4) Mathod of changing the sweep vibration frequency : Logarithmic or linear	Contact resistance (Item 4.1) <u>20</u> nΩ WAX Insulation resistance (Item 4.2 <u>100</u> KΩ MIN Voltage proof (Item 4.3) : Apply <u>500</u> V AC for 1 minut No dielectric breakdown shall
		 (5) Direction of vibration : Three vertical directions including actuator. (6) Time : 2 hours each (6 hours in total) 	Operating force (item 5.1) : Vithin <u>+10</u> % of specified No abnormalities shall be recog
5.9	Nechanical shock 5.9.1 Nechanical shock	Switch shall be measured after following test. (1) Mounting mathed : Normal mounting method (2) Acceleration : 490a/s ² (500-) (A) (3) Duration : 11ms (4) Test direction : 6 directions (5) Number of shock : 3 times per direction (18 times in total)	Contact resistance (item 4.1) : <u>20</u> mΩ MAX Operating force (item 5.1) Within <u>\pm18</u> X of specified Shall be free from mochanical abnormalities. (Dislocation of lock of actuato not be reserved as abnormaliti
	5.9.2 Lock holding shock (Applied to the switch with lock mechanism.)	Switch shall be conducted at the condition of locking actuator. (1) Acceleration : <u>147 m/s^a +=15-0+1</u> (2) Duration : <u>11 ms</u> (3) Test direction : 6 directions (4) Number of shock : 3 times per direction	Lock of actuator shall not be d located. Shall be free from abnormalities in operation.
5.10	Solderability	 (18 times in total) Switch shall be checked after following test. (1) Solder : H83A (JIS Z 3282) (2) Flux : Rosin flux (JIS K 5902) having a nominal composition of 25X solids by weight of water white rosin in methyl alcohol (JIS K 1501) solution. (3) Soldering temperature : 230±5℃ Immersing time : 3±0.5 s 	Nore than 90% of Immersed parts be covered with solder.
		Flux immersing time shall be 5~10 seconds in normal temperature. (4) Immersion depth : Immersion depth shall be at copper plating portion for P.C.B. terminal after mounting. Thickness of P.C. board : 1.6 mm	•
5.11	Soldering heat resistance	 Switch shall be measured after following test. (1) Solder : H63A (JIS Z 3282) (2) Flux : Rosin flux (JIS K 5502) having a nominal composition of 10% solids by weight of water white rosin in methyl alcohol (JIS K 1501) solution. (3) Temperature and immersing time 	No abnormalities shall be recosn in appearance. The electrical pe ance requirements specified in i shall be satisfied.
ŀ	·	Dip soldering 260±5 10±1 Manual soldering 350±10 3*j	· .
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	<u>S</u>	<u>PUN-S-501</u>	SPUN PRODUCT SPECIFICATIONS	
·.		Itens	(4) Intersion depth : Intersion depth shall be at copper plating	
			portion for P.C.B. terminal after mounting. Thickness of P.C. board (Single sided copper clad P.C.B.) : 1.6mm	
	5.12	Resistance to flux (Applied to the switch for P.C. board)	 Switch shall be checked after following test. (1) Equipzent : Auto-dip chamber (2) Solder : HB3A (JIS Z 3282) (3) Flux : Rosin flux (JIS K 5902) having a nominal composition of 25% solids by weight of water white rosin in methyl alcohol (JIS K 1501) solution. (4) Temperature : 260±5°C (5) Immersing time : 5±1 s 	Flux shall not be risen up to contact. Shall be free from abnormalities in operation.
		•	(6) Immersion depth : Immersion depth shall be at copper plating portion for P.C.B. terminal after mounting. Thickness of P.C. board : 1.6 mm	
	6. I	urability		·····
	6.1	1 Items Operating life	Test conditions Switch shall be operated 30.000 cycles at 15~20 cycles/similar without	Criterion Contact resistance (Iten 4.1) :
, L		without losd	load.	$\begin{array}{c} \underline{-40} & \underline{n}\Omega & \underline{MAX} \\ \hline \underline{-40} & \underline{n}\Omega & \underline{MAX} \\ \hline \underline{1nsulation resistance (ltem 4.2):} \\ \underline{-10} & \underline{M}\Omega & \underline{NIH} \\ \hline Voltage proof (ltem 4.3): \\ \underline{Apply 500} & \underline{V} & \underline{AC} \ for 1 \ \underline{ninute.} \\ \hline No \ dielectric \ breakdown \ shall \ occur. \\ \hline Dperating \ force \ (ltem 5.1): \\ \hline Vithin \ \underline{-10} & \underline{X} \ of \ specified \ value. \\ \hline Ho \ abnormalities \ shall \ be \ recognized \end{array}$
	6.2	Operating life with load	Switch shall be operated 10,000 cycles at $15\sim20$ cycles/minute with <u>30</u> V DC <u>0.1</u> A. (Resistive load)	in appearance and construction. Contact resistance (item 4.1) : _4O_mQ_MAX
				<u>10</u> NO KIN Voltage proof (Item 4.3) : Apply <u>500</u> V AC for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Vithin <u>± 40</u> X of specified value. No abnormalities shall be recognized in appearance and construction.
ŀ	<u></u>	Itens	Test conditions	Criterion
	7.1	Cold proof	After testing at -20±2°C for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and than measurement shall be made within 1 hour. Water drops shall be removed.	Contact resistance (item 4.1) : <u>40</u> mQ MAX Insulation resistance (item 4.2) : <u>10</u> MQ MIN Voltage proof (item 4.3) : Apply <u>500</u> V AC for 1 minute. No dielectric breakdown shall occur. Operating force (item 5.1) : Within <u>± 18</u> X of specified value. No abnormalities shall be recognized in appearance and construction.
	7 . 2	Dry heat	After testing at 85±2°C for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and then measurement shall be made within 1 hour.	Contact resistance (Item 4.1) : $^{-}$ <u>40</u> $\pm \Omega$ WAX Insulation resistance (Item 4.2) : <u>10</u> N Ω NIN Voltage proof (Item 4.3) : Apply <u>500</u> V AC for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Within $^{+}$ S of specified when
				No abnormalities shall be recognized in appearance and construction.
ſ		•	APPD, CHKD. DSGD.	TITLE ,
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•					· · · · · · · · · · · · · · · · · · ·	•
۰.	7.3	Damp heat	After testing at 40±2°C and 90-	-95XRH for 98 hours, the switch.sha	Li Contact registance	fion d 1) 1
			 be allowed to stand under normal for 1 hour, and measurement shall Vater drops shall be removed. 	temperature and humidity condition 1 be made within 1 hour after that.	is <u>40</u> μΩ· HAX Insulation resistant <u>10</u> ΗΩ HIN	ce (Item 4.2)
:			· .	•	Apply <u>500</u> V AC No dielectric bre	4.3) : for 1 minute. akdown shall og
•					Operating force (It Vithin ± 18 X o Ho abnormalities sh	em 5.1) : f specified val all be recogniz
	7.4 .	Salt mist	Switch shall be checked after fol	lloving test.	No remarkable corror	nstruction.
			(1) Temperature : $35\pm 2\%$ (2) Salt solution : $5\pm 1\%$ (Solids (3) Duration : 24 ± 1 h · After the test, solid dense it shall	s by weight)	recognized in metal	part.
	7.5	Temperature cycling	After 5 cycles of following condi stand under normal temperature an ensurement chall be rade within	tions, the switch shall be allowed d humidity conditions for 1 hour, a	to Contact resistance (nd <u>40</u> mΩ HAX	Item 4.1) :
		•	Vater drops shall be removed.	·	Insulation resistanc <u>10</u> HQ WIN Voltage proof (Item	e (Item 4.2) : 4.3) :
. '	•		70±2°C		Apply <u>500</u> V AC No dielectric brea Operating force (Iter Vithin 112 v of	for 1 minute. kdown shall occ 5.1) : specified web
			Normal		No abnormalities shall in appearance and con	be recognize struction.
			-25±3℃	30		
			10~	uin 15 10~15 uin		
			1 c	nin yclo		
	Pres 1. Re 2. U: 3. T	caution in use ote that if the lose erformence. se of water — solubin he knob should	d is applied to the terminals during soldaring flux shall be avoided be mounted or demounted af	s soldering they might suffer deform because it may cause corresion of t ter single-lock releasing.	mation and defects in el	sctrical
\sim	I • pr	f attomptod und inted circuit t (±0.05 tolerar	ler single locked condition board mounting hole diagram	, the single-acting mechanic	sm may be damaged:	
. 1	•	SHAP-IN TER	<u>Unals</u>	STRAIGHT TERNINALS	Lever	
·			Lever			
		·	LS HOLES 15	Ø.5'8!	HOLES &	
	•	<u>. 1x ¢</u> ,				7
	•	. <u>. /x</u> ¢.	SHOLES STIDE	<u></u>	HOLES	
Ø)	<u>Ix ø</u>	SHOLES START - 00000000000000000000000000000000000	 Ø/.5 %/ 0 9 1 1	HOLES	
Ø	D 4. Sol br	<u>./x ∉</u> dering should be perf soldering heat.	ormod after single lack released. If at	선(5명) 영 문 고 templed under single locked condition,	HOLES &	nay be deformed
	D 4. Sol by	_/x ∉ dering should be perf soldering heat.	ormod after single lack released. If at	tempted under single locked condition,	HOLES &	Bay be deformed
) 4 Sol by	_/x &	ormod after single lack released. If at	Lempted under single locked condition, APPD. CHKD. DSGD. M. S. Jun. 4	HOLES	Bay be deforeed

