Snap Action Switch

Subminiature Snap Action Switch

- Economical, subminiature snap action switch offers long service life (30 million operations minimum)
- All models are free from overtravel restrictions, permit easy setting
- Wide switching capacity range from microvoltage/current loads (1 mA at 5 VDC to high-capacity loads 10.1 A at 250 VAC)
- Standard operating force, low force or super-low force models available
- RoHS Compliant



Ordering Information

■ Standard Type

Microvoltage/microcurrent load 0.1 A max. (Bifurcated crossbar contacts)

			Model					
		Contact	PCB terminal			Soldered	Tab (#110)	
Actuator		OF	Straight vertical	Parallel to left	Parallel to right	terminal	terminal	
Pin plunger		25 g	SS-01-ED	—	—	SS-01-E	SS-01-ET	
		50 g	SS-01-FD	—	—	SS-01-F	SS-01-FT	
		150 g	SS-01D	SS-01D1	SS-01D2	SS-01	SS-01T	
Hinge lever		8 g	SS-01GL-ED	—	—	SS-01GL-E	SS-01GL-ET	
	<u> </u>	16 g	SS-01GL-FD	—	—	SS-01GL-F	SS-01GL-FT	
		50 g	SS-01GLD	SS-01GLD1	SS-01GLD2	SS-01GL	SS-01GLT	
Simulated roller	•	8 g	SS-01GL13-ED	—	—	SS-01GL13-E	SS-01GL13-ET	
lever		16 g	SS-01GL13-FD	—	—	SS-01GL13-F	SS-01GL13-FT	
		50 g	SS-01GL13D	—	—	SS-01GL13	SS-01GL13T	
Formed hinge lever		8 g	—	—	—	SS-01GL14-E	SS-01GL14-ET	
	\sim	16 g	SS-01GL14-FD	—	—	SS-01GL14-F	—	
		50 g	SS-01GL14D	—	—	SS-01GL14	SS-01GL14T	
Hinged roller lever	•	8 g	SS-01GL2-ED	_	—	SS-01GL2-E	SS-01GL2-ET	
	S.	16 g	SS-01GL2-FD	_	—	SS-01GL2-F	SS-01GL2-FT	
	میں انداز انداز مراجع انداز اندا	50 g	SS-01GL2D	_	—	SS-01GL2	SS-01GL2T	

■ General-Purpose

5 A max. (Standard rivet contacts)

		Model				
	Contact	PCB terminal			Soldered	Tab (#110)
Actuator	OF	Straight vertical	Parallel to left	Parallel to right	terminal	terminal
Pin plunger	50 g	SS-5-FD	SS-5-FD1	SS-5-FD2	SS-5-F	SS-5-FT
	150 g	SS-5D	SS-5D1	SS-5D2	SS-5	SS-5T
Hinge lever	16 g	SS-5GL-FD	SS-5GL-FD1	SS-5GL-FD2	SS-5GL-F	SS-5GL-FT
	50 g	SS-5GLD	SS-5GLD1	SS-5GLD2	SS-5GL	SS-5GLT
Simulated roller lever	16 g	SS-5GL13-FD	—	SS-5GL13-FD2	SS-5GL13-F	SS-5GL13-FT
	50 g	SS-5GL13D	SS-5GL13D1	SS-5GL13D2	SS-5GL13	SS-5GL13T
Formed hinge lever	16 g	SS-5GL14-FD	SS-5GL14-FD1	—	SS-5GL14-F	SS-5GL14-FT
	50 g	SS-5GL14D	SS-5GL14D1	SS-5GL14D2	SS-5GL14	SS-5GL14T
Hinge roller lever	16 g	SS-5GL2-FD	SS-5GL2-FD1	SS-5GL2-FD2	SS-5GL2-F	SS-5GL2-FT
	50 g	SS-5GL2D	SS-5GL2D1	SS-5GL2D2	SS-5GL2	SS-5GL2T

10.1 A max. (Standard rivet contacts)

		Model						
	Contact	PCB terminal		Soldered	Tab (#110)			
Actuator	OF	Straight vertical	Parallel to left	Parallel to right	terminal	terminal		
Pin plunger	150 g	SS-10D	—	—	SS-10	SS-10T		
Hinge lever	50 g	SS-10GLD	—	—	SS-10GL	SS-10GLT		
Simulated roller lever	50 g	SS-10GL13D	—	—	SS-10GL13	SS-10GL13T		
Formed hinge lever	50 g	—	—	—	SS-10GL14	—		
Hinge roller lever	50 g	SS-10GL2D	—	—	SS-10GL2	SS-10GL2T		

Specifications

■ Characteristics

Switch type		General-purpose		
Operating speed (see note	3)	0.1 mm to 1 m/second (0.004 to 39.4 in/second)		
Operating frequency	Mechanical	400 operations per minute (pin plunger actuator type)		
	Electrical	60 operations per minute (pin plunger actuator type)		
Insulation resistance		100 MΩ at 500 VDC		
Dielectric strength	Crossbar contact type	600 VAC, 50/60 Hz for 1 minute (see note 1)		
	Others	1,000 VAC, 50/60 Hz for 1 minute between terminals of same polarit 1,500 VAC, 50/60 Hz for 1 minute between current-carrying parts an ground and between each terminal and noncurrent-carrying metal parts		
Vibration	Malfunction durability	10 to 55 Hz, 1.5 mm double amplitude		
Shock	Mechanical durability	Low-OF type: 500 m/s ² min. (approx. 50 g) Others: 1,000 m/s ² min. (approx. 100 g)		
	Malfunction durability	Standard type: 300 m/s ² min. (approx. 30 g)		
		Low-OF type: 200 m/s ² min. (approx. 20 g)		
		Lever type at TTP: Contact gap, 1 ms max.		
Ambient temperature	Operating	-25° to 85° C with no icing		
Humidity		85% RH max.		
Service life	Mechanical	30 million operations minimum (OT: rated value) (see note 4)		
	Electrical	200,000 operations minimum (rated load) (see note 2)		
Weight	·	Approx. 1.6 g pin plunger type		

Note: 1. SS-10 series only.

- 2. 50,000 operations minimum for the SS-10 series.
- 3. Applies to the pin plunger type (at the pin plunger of the lever type).
- 4. 10 million operations for the SS-10 series.
- 5. Data shown are of initial value.

Operating Characteristics

	Part number	Part number							
Characteristics	SS-01-E	SS-01-F SS-5-F	SS-01 SS-5	SS-10	SS-01GL-E				
OF max.	25 g	50 g	150 g	150 g	8 g				
RF min.	2 g	4 g	25 g	25 g	1 g				
PT max.	0.5 mm (0.020 in)	0.5 mm (0.020 in)	0.5 mm (0.020 in)	0.6 mm (0.024 in)	1.2 mm (0.047 in)				
OT min.	0.5 mm (0.020 in)	0.5 mm (0.020 in)	0.5 mm (0.020 in)	0.4 mm (0.016 in)	0.8 mm (0.032 in)				
MD max.	0.1 mm (0.004 in)	0.1 mm (0.004 in)	0.1 mm (0.004 in)	0.12 mm (0.005 in)	13.6 mm (0.535 in)				
OP	8.4 ± 0.5 mm (0.331 ± 0.020 in)	8.8 ± 0.8 mm (0.346 ± 0.032 in)							

	Part number	Part number									
Characteristics	SS-01GL-F SS-5GL-F	SS-01GL SS-5GL	SS-10GL	SS-10GL13-E	SS-10GL13-F SS-5GL13-F						
OF max.	16 g	50 g	50 g	8 g	16 g						
RF min.	2 g	6 g	6 g	1 g	2 g						
PT max.	1.2 mm (0.047 in)	1.2 mm (0.047 in)	1.0 mm (0.039 in)	1.2 mm (0.047 in)	1.2 mm (0.047 in)						
OT min.	0.8 mm (0.032 in)	0.8 mm (0.032 in)	1.0 mm (0.039 in)	0.8 mm (0.032 in)	0.8 mm (0.032 in)						
MD max.	13.6 mm (0.535 in)	13.6 mm (0.535 in)	13.6 mm (0.535 in)	15.5 mm (0.610 in)	15.5 mm (0.610 in)						
OP	8.8±0.8 mm (0.346±0.032 in)	8.8±0.8 mm (0.346±0.032 in)	8.8±0.8 mm (0.346±0.032 in)	10.7±0.8 mm (0.421±0.032 in)	10.7±0.8 mm (0.421±0.032 in)						

	Part number							
Characteristics	SS-01GL13 SS-5GL13	SS-10GL13	SS-01GL14-E	SS-01GL14-F SS-5GL14-F	SS-01GL14 SS-5GL14			
OF max.	50 g	50 g	8 g	16 g	50 g			
RF min.	6 g	6 g	1 g	2 g	6 g			
PT max.	1.2 mm (0.047 in)	1.0 mm (0.039 in)	1.2 mm (0.047 in)	1.2 mm (0.047 in)	1.2 mm (0.047 in)			
OT min.	0.8 mm (0.032 in)	1.0 mm (0.039 in)	0.8 mm (0.032 in)	0.8 mm (0.032 in)	0.8 mm (0.032 in)			
MD max.	15.5 mm (0.610 in)	15.5 mm (0.610 in)	14.9 mm (0.587 in)	14.9 mm (0.587 in)	14.9 mm (0.587 in)			
OP	10.7 ± 0.8 mm (0.421 ± 0.032 in)	10.7 ± 0.8 mm (0.421 ± 0.032 in)	10.1 ± 0.8 mm (0.398 ± 0.032 in)	10.1 ± 0.8 mm (0.398 ± 0.032 in)	10.1 ± 0.8 mm (0.398 ± 0.032 in)			

	Part number	Part number							
Characteristics	SS-10GL14	SS-01GL2-E	SS-01GL2-F SS-5GL2-F	SS-01GL2 SS-5GL2	SS-10GL2				
OF max.	50 g	8 g	16 g	50 g	50 g				
RF min.	6 g	1 g	2 g	6 g	6 g				
PT max.	1.0 mm (0.039 in)	1.2 mm (0.047 in)	1.2 mm (0.047 in)	1.2 mm (0.047 in)	1.0 mm (0.039 in)				
OT min.	1.0 mm (0.039 in)	0.8 mm (0.032 in)	0.8 mm (0.032 in)	0.8 mm (0.032 in)	1.0 mm (0.039 in)				
MD max.	14.9 mm (0.587 in)	19.3 mm (0.760 in)							
OP	10.1 ± 0.8 mm (0.398 ± 0.032 in)	14.5 ± 0.8 mm (0.571 ± 0.032 in)							

■ Ratings

Microvoltage/microcurrent load type

	General purpose/resistive load	General purpose/resistive load				
	Bifurcated crossbar contacts	Bifurcated crossbar contacts				
Contact form	NC	NO				
125 VAC	0.1 A	0.1 A				
30 VDC	0.1 A	0.1 A				
Inrush current	1 A max.	1 A max.				

Standard type general purpose

	Rivet cont	acts								
	Resistive	oad			Lamp load	1	Inductive	load	Motor loa	d
Switch series:	SS-5		SS-10		SS-5 and	SS-10	SS-5 and	SS-10	SS-5 and	SS-10
Contact form	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	5 A	5 A	10.1 A	10.1 A	1.5 A	0.7 A	3 A	3 A	2.5 A	1.3 A
250 VAC	3 A	3 A	10.1 A	10.1 A	1 A	0.5 A	2 A	2 A	1.5 A	0.8 A
8 VDC	5 A	5 A	10.1 A	10.1 A	2 A	2 A	5 A	4 A	3 A	3 A
14 VDC	5 A	5 A	10.1 A	10.1 A	2 A	2 A	4 A	4 A	3 A	3 A
30 VDC	4 A	4 A	4 A	4 A	2 A	2 A	3 A	3 A	3 A	3 A
125 VDC	0.4 A	0.4 A	0.4 A	0.4 A	0.05 A	0.05 A	0.4 A	0.4 A	0.05 A	0.05 A
250 VDC	0.2 A	0.2 A	0.2 A	0.2 A	0.03 A	0.03 A	0.2 A	0.2 A	0.03 A	0.03 A
Inrush current	20 A max.	10 A max.	20 A max.	15 A max. (both non-ind	uctive and ir	nductive load	s)		

Note: 1. The above current ratings are the values of the steady-state current.

2. Inductive load has a power factor of 0.4 min. (AC) and a time constant of 7 milliseconds max. (DC). The inductive load applicable to the SS-10 series must have a power factor of 0.75 min.

3. Lamp load has an inrush current of 10 times the steady-state current

4. Motor load has an inrush current of 6 times the steady-state current.

5. If the switch is used in a DC circuit and is subjected to inrush current or surge, connect a surge suppressor across the switch.

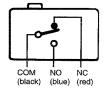
Contact Resistance (mΩ max., initial)

	SS-01	SS-5	SS-10	
Contact rating:	0.1 A	3 A or 5 A	10.1 A	
Normal operating force models (SS-□)	$50 \text{ m}\Omega$	30 mΩ	30 mΩ	
Low operating force models (SS-□-F)	100 mΩ	$50 \text{ m}\Omega$	—	
Super-low operating force models (SS-□-E)	150 mΩ	—	—	
Lead wire models (all OF types)	100 m Ω	$50 \text{ m}\Omega$	—	

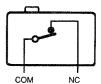
■ Contact Form

SPDT

(common throughout the series)



SPST-NC* (standard models rated at 0.1 to 0.5 A)



SPST-NO*





Sealed lead wire terminal models have color coded leads.

* Consult Omron for SPST-NC and SPST-NO contact form types ordering information.

■ Approvals

UL (File No. E41515), CSA (File No. LR21642), SS-5/SS-10: EN conforms 61058-1

Туре		Rating
SS-10 series	General-purpose type	10.1 A, 250 VAC
SS-5 series	General-purpose type	5 A, 125 V, 3 A 250 VAC
SS-01 series	Super-low force type	0.1 A, 125 VAC, 30 VDC

VDE (File No. 5861-3221)

Туре	Rating				
SS-5 series	General-purpose type	5 A, 250 VAC			

SEMKO (File Nos. 43-8614026/43-891609)

Туре		Rating
SS-10 series	General-purpose type	10 A, 250 VAC
SS-5 series	General-purpose type	5 A, 250 VAC

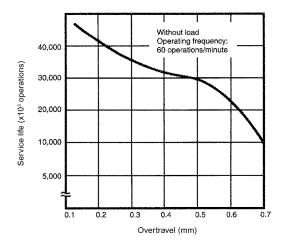
Note: The rated values approved by each of the safety standards (e.g. UL, CSA) may be different from the performance characteristics individually defined in this catalog.



Engineering Data

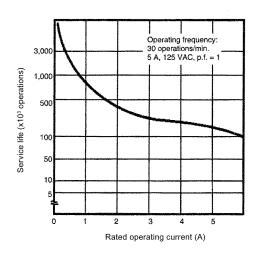
■ Mechanical service life

Standard type (SS-5, SS-10 series)



■ Electrical service life

Standard type (SS-5 series)

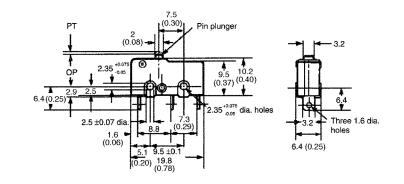


Dimensions

Unit: mm (inch)

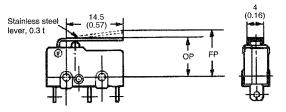
Pin Plunger

SS-01 (-E, -F) SS-5 (-F) SS-10



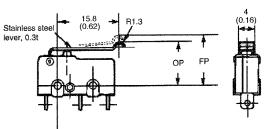
■ Hinge Lever

SS-01GL (-E, -F) SS-5GL (-F) SS-10GL



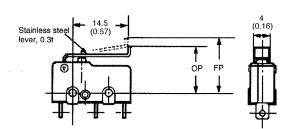
Simulated Roller Lever

SS-01GL13 (-E, -F) SS-5GL13 (-F) SS-10GL13



Formed Hinge Lever

SS-01GL14 (-E, -F) SS-5GL14 (-F) SS-10GL14

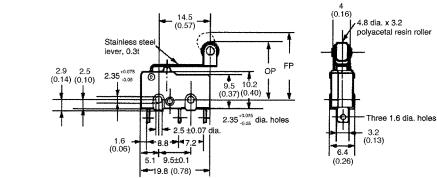


Note: 1. Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

2. Straight vertical PCB terminal models are shown above. Soldered terminal, Tab (#110) terminal, lead wire terminal, PCB terminal parallel to left and PCB terminal parallel to right are shown in the Terminals section.

■ Hinge Roller Lever

SS-01GL2 (-E, -F) SS-5GL2 (-F) SS-10GL2

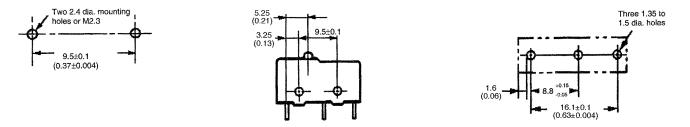


Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

■ Mounting holes

Standard types

Mounting holes below are for reference only



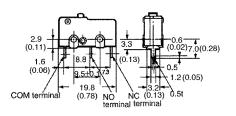
Note: Unless otherwise specified, a tolerance of ± 0.4 mm applies to all dimensions.

Unit: mm (inch)

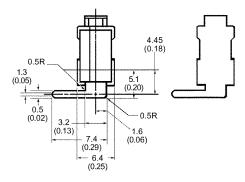
■ Terminals

General-Purpose Type

PCB terminal, straight vertical (D)

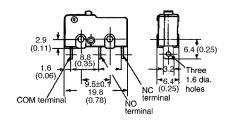


PCB terminal, parallel to left (D1)

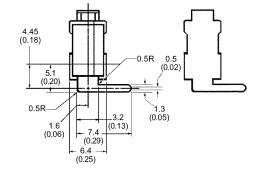


Note: Thickness of all the terminals is 0.5 mm.

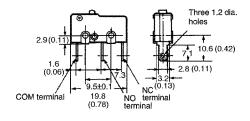
Soldered terminal (blank)



PCB terminal, parallel to right (D2)



Quick-connect tab (#110) terminal (T)



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Terms and Conditions of Sale

- Offer; Acceptance. These terms and conditions (these "Terms") are deemed part of all quotations, acknowledgments, invoices, purchase orders and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronic Components LLC ("Seller"). Seller hereby objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
- Prices: Payment. All prices stated are current, subject to change without notice by Seller. Buyer agrees to pay the price in effect at time of shipment. Payments for Products received are due net 30 days unless otherwise stated 2. the invoice
- Discounts. Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (i) the invoice is paid according to Seller's 3
- payment terms and (ii) Buyer has no past due amounts owing to Seller. <u>Currencies</u>. If the prices quoted herein are in a currency other than U.S. dol lars, Buyer shall make remittance to Seller at the then current exchange rate most favorable to Seller and which is available on the due date; provided that if remittance is not made when due, Buyer will convert the amount to U.S. dol-lars at the then current exchange rate most favorable to Seller available during the period between the due date and the date remittance is actually made.
- Governmental Approvals. Buyer shall be responsible for, and shall bear all costs involved in, obtaining any government approvals required for the impor-tation or sale of the Products. 5.
- Taxes. All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Seller or required to be collected directly or indirectly by Seller for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties) 6. and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Seller.
- Financial. If the financial position of Buyer at any time becomes unsatisfactory to Seller, Seller reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise 7. comply with these Terms or any related agreement, Seller may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid
- Cancellation; Etc. Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Seller fully against all costs or expenses arising in 8. connection therewith
- Force Majeure. Seller shall not be liable for any delay or failure in delivery 9. resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the
- <u>Shipping: Delivery</u>. Unless otherwise expressly agreed in writing by Seller:
 <u>Shipping: Delivery</u>. Unless otherwise expressly agreed in writing by Seller:
 <u>Shipping: Sellivery</u>. Sellivery is the sellivery of the sellivery of the sellivery of the sellivery of the sellivery.
 - Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer;
 - 3 All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Seller), at which point title to and all risk of loss of the Products shall pass from Seller to Buyer, provided that Seller shall retain a security interest in the Products until the full purchase price is paid by Buver:
- paid by Buyer;
 4. Delivery and shipping dates are estimates only.
 5. Seller will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
 11. <u>Claims</u>. Any claim by Buyer against Seller for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Seller within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Products from Seller in the condition claimed.

- <u>Warranties</u>. (a) <u>Exclusive Warranty</u>. Seller's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Seller (or such other period expressed twelve months from the date of sale by Seller (or such other period expressed in writing by Seller). Seller disclaims all other warranties, express or implied. (b) Limitations. SELLER MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABIL-ITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. Seller further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or othany type for claims of expenses based on infringement by the Products of oth-erwise of any intellectual property right. (c) <u>Buyer Remedy</u>. Seller's sole obli-gation hereunder shall be to replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product or, at Seller's election, to repay or credit Buyer an amount equal to the purchase price of the Product; provided that in no event shall Seller be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Seller's analysis confirms that the Products were properly handled, stored, installed and maintained and not sub-iect to contamination, abuse, misuse or inappropriate modification. Return of ject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Seller before shipment. Seller shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies, or any other materials or substances or environ-
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- etary, and Buyer shall limit distribution thereof to its trusted employees and strictly prevent disclosure to any third party.
 16. <u>Miscellaneous</u>. (a) <u>Waiver</u>. No failure or delay by Seller in exercising any right and no course of dealing between Buyer and Seller shall operate as a waiver of rights by Seller. (b) <u>Assignment</u>. Buyer may not assign its rights hereunder without Seller's written consent. (c) <u>Law</u>. These Terms are governed by Illinois law (without regard to conflict of law principles). Federal and state courts in Illinois shall have exclusive jurisdiction for any dispute hereunder. (d) <u>Amendment</u>. These Terms constitute the entire agreement between Buyer and Seller relating to the Products, and no provision may be changed or waived unless in writing signed by the parties. (e) <u>Severability</u>. If any provision hereof is rendered ineffective or invalid such provision shall not invalidate any hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (f) <u>Setoff</u>. Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice.. (g) <u>Definitions</u>. As used herein, "including" means "including without limitation".

Certain Precautions on Specifications and Use

- Suitability for Use. Seller shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in Buyer's application or use of the Product. At Buyer's request, Seller will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product this responsibility in all cases but the following is a non-exhaustive list of applications for which particular attention must be given:

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 - (ii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to
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