

INTRODUCTION

Development cycles in modern industry are becoming ever shorter and more complex, and they require a high degree of engineering. Components integrated into machines must therefore not only meet the current qualitative and technical standards but must also fulfill functional and application demands. Individual products can often only be integrated after they have been customized.

Panasonic Electric Works has always stood for product innovation – also when it comes to mechanical switches. Our immense portfolio includes switches in all common sizes and with various IP degrees of protection, and are guaranteed to cover all standard requirements. Our switches are characterized by a large switching capacity range, long lifetime and exceptional reliability. A wide selection of supplemental actuators coupled with various terminal styles, e.g. solder, quick connect, PC board terminal and cable connections, maximize flexibility and ease application design.

In addition, we concentrate on the development and implementation of customer-specific solutions: Does the cable have to be a little bit longer? Or is a pluggable solution necessary? With the engineering know-how at our European manufacturing sites, we guarantee flexible, on-time delivery and provide immediate, on-site technical support.

PRODUCT LINEUP



TAILORING EQUIPMENT

Process steps

- Wire cutting
- Wire welding
- Hotmelt potting
- Contact crimping
- Development of customer-specific actuators
- Final assembly
- 100% final test
- Packaging

CONTENTS

MICRO SWITCHES IP67	4
SWITCHES SELECTOR CHART	5
Basic switches.....	6
Subminiature switches.....	6
Subminiature switches.....	7
Ultraminiature switches.....	7
ABOUT THIS SELECTOR CHART	7
Ultraminiature switches.....	8
Interlock switches.....	8
Detection switches.....	9
Rocker switches.....	9
SWITCHES SELECTOR CHART	9
MICRO SWITCHES IP40	10
Rocker switches.....	10
TOGGLE SWITCHES	11

APPLICATION AREAS FOR PANASONIC SWITCHES (EXAMPLES):



Automotive

- Seat detection
- Electronic Steering Column Lock (ESCL)
- Door contact switch
- Electronic Parking Brake (EPB)



Industrial technology

- Final position switch
- Position recognition
- Air compressor
- Circuit breaker



Medical technology

- Electrically adjustable hospital bed
- OP table
- Eye diagnostic



Health care/Wellness

- Bathtub entrance
- Lady shaver
- Massage device



Building automation

- Air conditioning
- Heating control
- Jalousie control






Security engineering

- Manual call point
- Break-in detection system
- Lock monitoring



MICRO SWITCHES IP67


ABOUT THIS SELECTOR CHART


This selector chart is designed to help you quickly select a switch best suited for your needs. Please note: the values given for switching current and switching voltage do not necessarily indicate

		ASQM	ASQ	ABJ
Type		 8.3 x 5.3 x 7.85mm	 13.3 x 5.4 x 10.1mm	 12.8 x 6 x 6.5mm 13.9 x 6 x 12.5mm
Features		<ul style="list-style-type: none"> • Subminiature design with slide contact • Over-travel 1.75mm • Noiseless switching • Side operation possible • High contact reliability 	<ul style="list-style-type: none"> • Ultra miniature design with slide contact • Over-travel 2.5mm • Noiseless switching • Side operation possible • High contact reliability 	<ul style="list-style-type: none"> • Ultra miniature design • Highly resistant to environmental conditions • Frost-resistant
Switching current		1mA to 50mA	1mA to 100mA	1mA to 2A
Contact types		SPST-NC, SPST-NO	SPDT, SPST-NC, SPST-NO	SPDT, SPST-NC, SPST-NO
Contact material		Ag	Ag/Au	Ag/Au
Switching voltage (max.)	VDC	16	30	30
	VAC	-	-	125
Ambient temperature		-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Service life (min.)	Mechanical	1,000,000	1,000,000	1,000,000
	Electrical	300,000/ 200,000/ 150,000	500,000	30,000/ 100,000
Operating force on pin in N (max.)		1.5	1.7	1.96
Connection types		<ul style="list-style-type: none"> • Solder • Lead wire 	<ul style="list-style-type: none"> • Solder • PCB • Lead wire 	<ul style="list-style-type: none"> • Solder • PCB • Lead wire
Actuator		<ul style="list-style-type: none"> • Pin plunger • Simulated roller lever 	<ul style="list-style-type: none"> • Pin plunger • Hinge lever • Simulated roller lever 	<ul style="list-style-type: none"> • Pin plunger • Roller lever • Hinge lever • Simulated roller lever • Other
Degree of protection		IP67	IP67	IP67
Approvals		-	-	UL, CSA

standard operating conditions. For the nominal switching capacity and other critical values, please refer to the respective data sheet or contact your Panasonic representative.

		ABS	ABV
Type		 <p>19.8 x 6.4 x 11.1mm 21.2 x 6.4 x 16.9mm</p>	 <p>33 x 15.9 x 13mm</p>
Features		<ul style="list-style-type: none"> • Subminiature design • Highly resistant to environmental conditions • Frost-resistant 	<ul style="list-style-type: none"> • Miniature design • Highly resistant to environmental conditions • Frost-resistant
Switching current		1mA to 2A	1mA to 5A
Contact types		SPDT, SPST-NC, SPST-NO	SPDT, SPST-NC, SPST-NO
Contact material		Ag/Au 3-layer contact	Ag/Au
Switching voltage (max.)	VDC	30	30
	VAC	250	250
Ambient temperature		-40°C to +85°C	-40°C to +85°C
Service life (min.)	Mechanical	5,000,000	5,000,000
	Electrical	50,000/ 200,000	100,000/ 1,000,000
Operating force on pin in N (max.)		1.47	2.94
Connection types		<ul style="list-style-type: none"> • Solder • PCB • Lead wire • Quick connect 	<ul style="list-style-type: none"> • Lead wire • Quick connect
Actuator		<ul style="list-style-type: none"> • Pin plunger • Roller lever • Hinge lever • Simulated roller lever • Other 	<ul style="list-style-type: none"> • Pin plunger • Roller lever • Hinge lever • Simulated roller lever • Other
Degree of protection		IP67	IP67
Approvals		UL, CSA, VDE, SEMKO	UL, CSA, VDE, SEMKO

		AM1 Basic	AV3, AVM3, AVT3, AVL3	AV3 (FS)
		Basic switches	Subminiature switches	
Type		 <p>49.2 x 17.5 x 24.1mm</p>	 <p>19.8 x 6.4 x 11.1mm</p>	 <p>19.8 x 6.4 x 11.1mm</p>
Features		<ul style="list-style-type: none"> • End of travel limit switch • High precision and long service life • Oil-proof design available 	<ul style="list-style-type: none"> • Subminiature design • Wide variety of types • High-capacity type available for 10A • Long service life 	<ul style="list-style-type: none"> • Contact gap more than 1mm • Subminiature design • Conforming to IEC60950-1
Switching current		10mA to 10A	1mA to 5A	100mA to 3A
Contact types		SPDT	SPDT	SPDT
Contact material		Ag	Ag/Au3-layer contact	Ag
Switching voltage (max.)	VDC	250	125	30
	VAC	480	250	-
Ambient temperature		-25°C to +80°C	-25°C to +85°C	-25°C to +85°C
Service life (min.)	Mechanical	20,000,000	500,000 / 30,000,000	500,000
	Electrical	500,000	50,000 / 200,000	10,000
Operating force on pin in N (max.)		3.63	1.47	1.47
Connection types		<ul style="list-style-type: none"> • Solder • Screw 	<ul style="list-style-type: none"> • Solder • PCB • Quick connect 	<ul style="list-style-type: none"> • Solder • PCB • Quick connect
Actuator		<ul style="list-style-type: none"> • Standard plunger • Roller lever • Simulated roller lever • Straight lever • Other 	<ul style="list-style-type: none"> • Pin plunger • Roller lever • Simulated roller lever • Hinge lever • Other 	<ul style="list-style-type: none"> • Pin plunger • Short hinge lever • Hinge lever • Long hinge lever • Simulated roller lever • Roller lever • Other
Degree of protection		IP40	IP40	IP40
Approvals		UL, CSA	UL, CSA, VDE, SEMKO	UL, CSA, VDE, SEMKO under application





		AV6	AEQ	AH1
		Subminiature switches	Ultraminiature switches	
Type		 <p>29.2 x 10 x 7mm</p>	 <p>13.3 x 5.4 x 10.1mm</p>	 <p>12.8 x 6 x 6.5mm</p>
Features		<ul style="list-style-type: none"> Subminiature design Connector type for simple connections 	<ul style="list-style-type: none"> Subminiature design Handles low level loads 100µA/3VDC to 	<ul style="list-style-type: none"> Ultra miniature design Flux-resistant Gold contact available for low loads
Switching current		1mA to 100mA	100µA to 100mA	1mA to 3A
Contact types		SPST-NC SPST-NO	SPDT	SPDT, SPST-NO
Contact material		Au	Au	Ag/Au
Switching voltage (max.)	VDC	30	30	30
	VAC	-	-	125
Ambient temperature		-25°C to +85°C	-40°C to +85°C	-25°C to +80°C
Service life (min.)	Mechanical	500,000	200,000	1,000,000
	Electrical	200,000	100,000	30,000 / 100,000
Operating force on pin in N (max.)		1.5	1.7	1.47
Connection types		<ul style="list-style-type: none"> Connector 	<ul style="list-style-type: none"> Solder PCB 	<ul style="list-style-type: none"> Solder PCB
Actuator		<ul style="list-style-type: none"> Pin plunger Roller lever Simulated roller lever Hinge lever Other 	<ul style="list-style-type: none"> Pin plunger Leaf lever Simulated leaf lever 	<ul style="list-style-type: none"> Pin plunger Simulated roller lever Hinge lever
Degree of protection		IP40	IP40	IP40
Approvals		UL, CSA	-	UL, CSA

MICRO SWITCHES IP40







		AV4	AGX	AV1
		Ultraminiature switches	Interlock switches	
Type		 7.5 x 2.5 x 4.5mm	 27 x 14.6mm/ 27.2 x 24.6mm	 30 x 12.4 x 34mm
Features		<ul style="list-style-type: none"> • Super miniature design 	<ul style="list-style-type: none"> • Door interlock switch • Contact gap more than 4mm • Snap-in fixing • Separate signal and switching contacts for 3 Form A type 	<ul style="list-style-type: none"> • Door interlock switch • Snap-in/screw fixing • Contact gap 8mm for 2 Form A/3 Form A snap-in mounting type
Switching current		1mA to 0.5A	10mA to 10.1A	10mA to 10.1A
Contact types		SPDT	SPST-NO	SPST-NC SPST-NO
Contact material		Ag/Au	Ag	Ag
Switching voltage (max.)	VDC	30	48	30
	VAC	-	250	250
Ambient temperature		-25°C to +85°C	-25°C to +85°C	-25°C to +85°C
Service life (min.)	Mechanical	300,000	1,000,000	1,000,000
	Electrical	20,000 / 200,000	100,000	100,000
Operating force on pin in N (max.)		0.98	5.88	9.81
Connection types		<ul style="list-style-type: none"> • Solder • PCB 	<ul style="list-style-type: none"> • Quick connect 	<ul style="list-style-type: none"> • Quick connect
Actuator		<ul style="list-style-type: none"> • Pin plunger • Simulated roller lever • Hinge lever 		
Degree of protection		IP40	IP40	IP40
Approvals		-	UL, CSA, VDE, SEMKO, ENEC	UL, CSA, VDE, ENEC

Actuator Symbols: Push-button  Toggle  Rocker 

		AHF2	AJ8S	AJ8R
		Detection switches	Rocker switches	
Type		 9.3 x 9.5mm	 29.8 x 21.7 x 29.5mm	 29.8 x 21.7 x 29.5mm With trip function
Features		<ul style="list-style-type: none"> • Photo sensor inside 	<ul style="list-style-type: none"> • Power switch with a contact for low level current, i.e. HDD protection • Inrush current to 160A • Complies with EN61058-1 class II insulation grade • Insulation distance: 8mm • Contact gap: 3mm 	<ul style="list-style-type: none"> • Power switch with coil operated reset function • Inrush current to 160A • Good feel of switch operation • Complies with IEC61058-1
Switching current		Photo transistor. Please refer to the data sheet.	10mA to 16A	10mA to 16A
Contact types		Operation angle: 25° to 60°	ON - OFF	ON - OFF
Contact material		-	Power: Ag Signal: Au-plated	Ag
Switching voltage (max.)	VDC	-	5 per signal section	30
	VAC	-	250 per power section	250
Ambient temperature		-20°C to +80°C	-25°C to +85°C	0°C to +60°C
Service life (min.)	Mechanical	100,000	50,000	50,000
	Electrical	100,000	10,000	10,000
Operating force on pin in N (max.)		-	-	-
Connection types		<ul style="list-style-type: none"> • PCB 	<ul style="list-style-type: none"> • Quick connect 	<ul style="list-style-type: none"> • Quick connect
Actuator		<ul style="list-style-type: none"> • Photo sensor 		
Degree of protection		-	IP40	IP40
Approvals		-	UL, C-UL, TÜV	UL, C-UL, TÜV, SEMKO

		AJ7	AJ8
Type		Rocker switches	
		 <p>28 x 12.5 21 x 16mm</p>	 <p>28 x 12.5 21 x 16mm</p>
Features		<ul style="list-style-type: none"> • Power switch for safety requirements • Standard and wide actuator types available • Insulation distance 8mm • Contact gap 3mm • Inrush current to 100A • TV-5 type available 	<ul style="list-style-type: none"> • Power switch for safety requirements • Standard and wide actuator types available • Insulation distance 8mm • Contact gap 3mm • Inrush current to 160A • TV-8 type available
Switching current		10mA to 10A	10mA to 16A
Contact types		ON - OFF	ON - OFF
Contact material		Ag	Ag
Switching voltage (max.)	VDC	30	30
	VAC	250	250
Ambient temperature		-25°C to + 85°C	-25°C to + 85°C
Service life (min.)	Mechanical	50,000	50,000
	Electrical	10,000	10,000
Operating force on pin in N (max.)		-	-
Connection types		<ul style="list-style-type: none"> • Quick connect • Solder • PCB 	<ul style="list-style-type: none"> • Quick connect • Solder • PCB
Actuator			
Degree of protection		IP40	IP40
Approvals		UL, C-UL, ENEC, VDE	UL, C-UL, ENEC, VDE

Actuator Symbols: Push-button  Toggle  Rocker 

		T15	T10	T-06, T-03
Type	Toggle switches			
		 29 x 15.8 x 23.7mm	 29 x 15.8 x 23.7mm	 25 x 14.8 x 18.6mm
Features		<ul style="list-style-type: none"> Toggle, rocker and push-button switches with safety design Contact gap more than 3mm Degrees of protection up to IP67 Rubber cap available for excellent weather resistance 	<ul style="list-style-type: none"> Toggle switches with safety design Rubber cap available for excellent weather resistance Terminal construction for easy soldering work 	<ul style="list-style-type: none"> Compact toggle switches for space-saving design Rubber cap available for excellent weather resistance
Switching current		10mA to 15A	10mA to 10A	10mA to 3A/6A
Contact types		<ul style="list-style-type: none"> On-Off On-On On-Off-On On-(On) (On)-Off-(On) On-Off-(On) 	<ul style="list-style-type: none"> On-Off On-On 	<ul style="list-style-type: none"> On-Off On-On
Contact material		Ag	Ag	Ag
Switching voltage (max.)	VDC	250	250	30
	VAC	250	250	250
Ambient temperature		-25°C to + 70°C	-25°C to + 70°C	-25°C to + 70°C
Service life (min.)	Mechanical	100,000	100,000	50,000
	Electrical	50,000	30,000	30,000 / 10,000
Switching contact		1-pole, 2-pole, 3-pole, 4-pole	1-pole, 2-pole	1-pole, 2-pole
Connection types		<ul style="list-style-type: none"> Solder Screw Quick connect Lead wire 	<ul style="list-style-type: none"> Solder 	<ul style="list-style-type: none"> Solder
Actuator				
Degree of protection		IP40 IP60 IP67	IP40	IP40
Approvals		UL, C-UL	UL, C-UL	-

North America

Europe

Asia Pacific

China

Japan

Panasonic Electric Works

Please contact our Global Sales Companies in:

Europe

▶ Headquarters	Panasonic Electric Works Europe AG	Rudolf-Diesel-Ring 2, 83607 Holzkirchen, Tel. +49 (0) 8024 648-0, Fax +49 (0) 8024 648-111, www.panasonic-electric-works.com
▶ Austria	Panasonic Electric Works Austria GmbH	Josef Madersperger Str. 2, 2362 Biedermannsdorf, Tel. +43 (0) 2236-26846, Fax +43 (0) 2236-46133 www.panasonic-electric-works.at
	Panasonic Industrial Devices Materials Europe GmbH	Ennschafenstrasse 30, 4470 Enns, Tel. +43 (0) 7223 883, Fax +43 (0) 7223 88333, www.panasonic-electronic-materials.com
▶ Benelux	Panasonic Electric Works Sales Western Europe B.V.	De Rijn 4, (Postbus 211), 5684 PJ Best, (5680 AE Best), Netherlands, Tel. +31 (0) 499 372727, Fax +31 (0) 499 372185, www.panasonic-electric-works.nl
▶ Czech Republic	Panasonic Electric Works Europe AG	Administrative centre PLATINIUM, Veverří 3163/111, 616 00 Brno, Tel. +420 541 217 001, Fax +420 541 217 101, www.panasonic-electric-works.cz
▶ France	Panasonic Electric Works Sales Western Europe B.V.	Succursale française, 10, rue des petits ruisseaux, 91370 Verrières Le Buisson, Tél. +33 (0) 1 6013 5757, Fax +33 (0) 1 6013 5758, www.panasonic-electric-works.fr
▶ Germany	Panasonic Electric Works Europe AG	Rudolf-Diesel-Ring 2, 83607 Holzkirchen, Tel. +49 (0) 8024 648-0, Fax +49 (0) 8024 648-111, www.panasonic-electric-works.de
▶ Hungary	Panasonic Electric Works Europe AG	Magyarországi Közvetlen Kereskedelmi Képviselet, 1117 Budapest, Neumann János u. 1., Tel. +36 1 999 89 26 www.panasonic-electric-works.hu
▶ Ireland	Panasonic Electric Works UK Ltd.	Irish Branch Office, Dublin, Tel. +353 (0) 14600969, Fax +353 (0) 14601131, www.panasonic-electric-works.co.uk
▶ Italy	Panasonic Electric Works Italia srl	Via del Commercio 3-5 (Z.I. Ferlina), 37012 Bussolengo (VR), Tel. +39 0456752711, Fax +39 0456700444, www.panasonic-electric-works.it
▶ Nordic Countries	Panasonic Electric Works Europe AG	Filial Nordic, Knarrarnäsgatan 15, 164 40 Kista, Sweden, Tel. +46 859476680, Fax +46 859476690, www.panasonic-electric-works.se
	Panasonic Eco Solutions Nordic AB	Jungmansgatan 12, 21119 Malmö, Tel. +46 40 697 7000, Fax +46 40 697 7099, www.panasonic-fire-security.com
▶ Poland	Panasonic Electric Works Polska sp. z o.o	ul. Wofoska 9A, 02-583 Warszawa, Tel. +48 22 338-11-33, Fax +48 22 338-12-00, www.panasonic-electric-works.pl
▶ Spain	Panasonic Electric Works España S.A.	Barajas Park, San Severo 20, 28042 Madrid, Tel. +34 913293875, Fax +34 913292976, www.panasonic-electric-works.es
▶ Switzerland	Panasonic Electric Works Schweiz AG	Grundstrasse 8, 6343 Rotkreuz, Tel. +41 (0) 41 7997050, Fax +41 (0) 41 7997055, www.panasonic-electric-works.ch
▶ United Kingdom	Panasonic Electric Works UK Ltd.	Sunrise Parkway, Linford Wood, Milton Keynes, MK14 6LF, Tel. +44 (0) 1908 231555, Fax +44 (0) 1908 231599, www.panasonic-electric-works.co.uk

North & South America

▶ USA	Panasonic Industrial Devices Sales Company of America	629 Central Avenue, New Providence, N.J. 07974, Tel. 1-908-464-3550, Fax 1-908-464-8513, www.pewa.panasonic.com
--------------	--	---

Asia Pacific / China / Japan

▶ China	Panasonic Electric Works Sales (China) Co. Ltd.	Level 2, Tower W3, The Towers Oriental Plaza, No. 2, East Chang An Ave., Dong Cheng District, Beijing 100738, Tel. +86-10-5925-5988, Fax +86-10-5925-5973
▶ Hong Kong	Panasonic Industrial Devices Automation Controls Sales (Hong Kong) Co., Ltd.	RM1205-9, 12/F, Tower 2, The Gateway, 25 Canton Road, Tsimshatsui, Kowloon, Hong Kong, Tel. +852-2956-3118, Fax +852-2956-0398
▶ Japan	Panasonic Corporation	1048 Kadoma, Kadoma-shi, Osaka 571-8686, Japan, Tel. +81-6-6908-1050, Fax +81-6-6908-5781, www.panasonic.net
▶ Singapore	Panasonic Industrial Devices Automation Controls Sales Asia Pacific	300 Beach Road, #16-01 The Concourse, Singapore 199555, Tel. +65-6390-3811, Fax +65-6390-3810