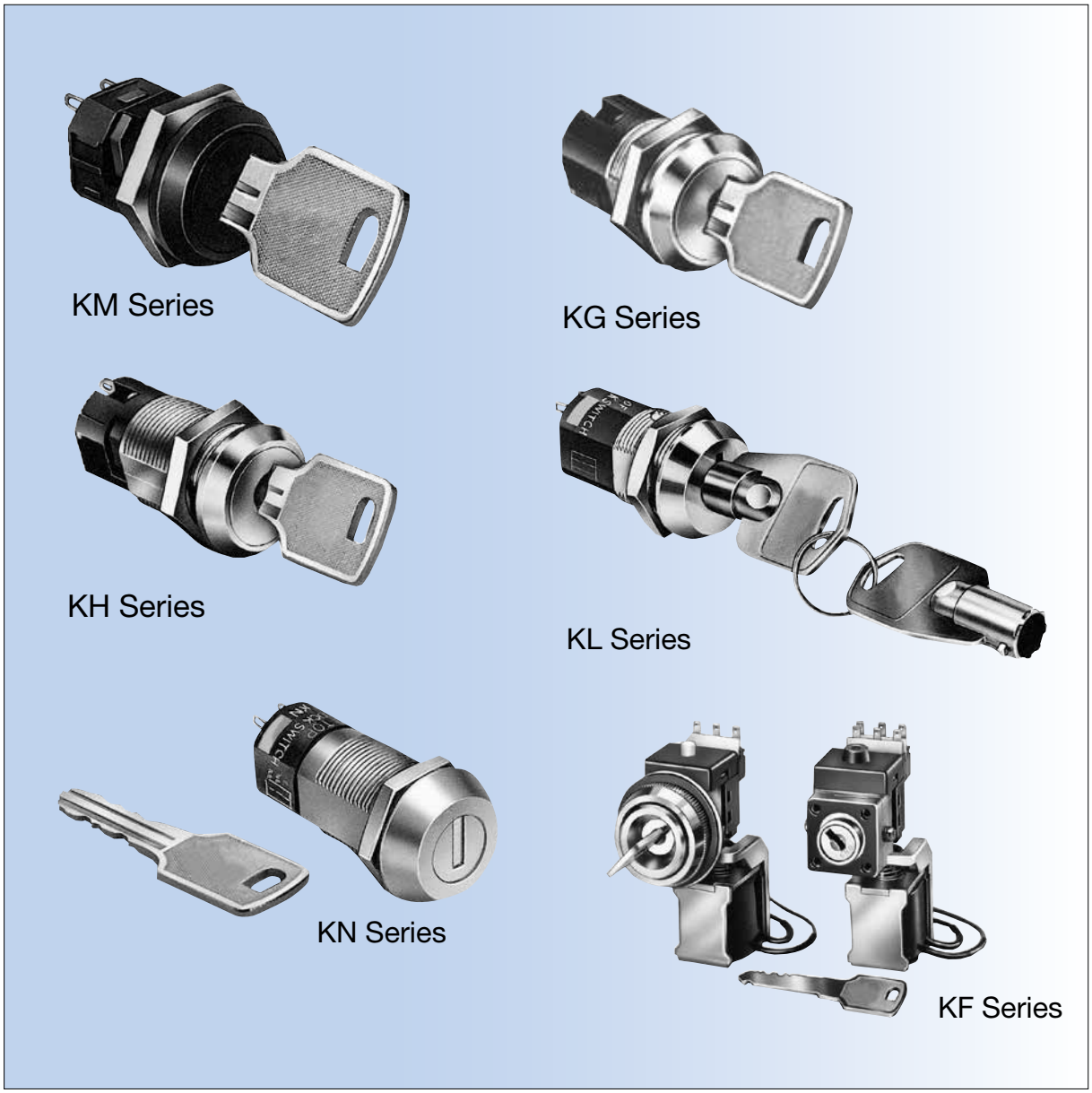
IDEC

Think Automation and beyond...

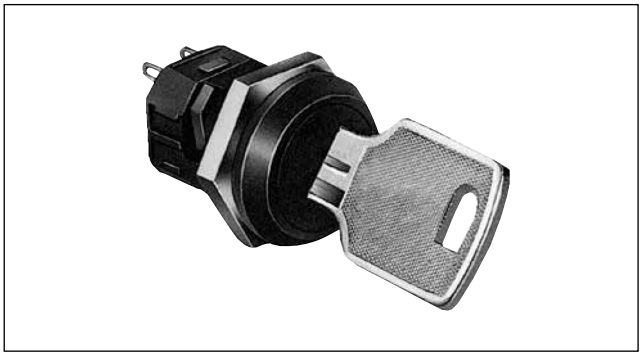
K Series
Key Lock Switches



IDEC CORPORATION

KM Series Miniature Key Lock Switches

Miniature, light-weight, plastic housing
Withstands electrostatic voltage of 15 kV



- Miniature, light-weight body
  Depth behind the panel: 25.5 mm (Housing: 19.5 mm),
  Weight: Approx. 10g (excluding key)
- Electrostatic withstand voltage of 15 kV
- For mounting in ø19-mm oval hole
- High-performance microswitch contacts (gold or silver)
- Two keys are supplied.

KM Series

Series	Position		Key Retained at ●		No. of Contacts	Part No.		Operator Position and Contact Operation (Top View)			
						Silver Contact	Gold Contact	No. of Contacts	Left	Center	Right
KM	90° 2-Position	Maintained	A	Ⓛ Ⓡ	SPDT	KM2C-10A	KM2C-11A	SPDT	NO NC C1	—	NO NC C1
					DPDT	KM2C-20A	KM2C-21A				
			B	Ⓛ ●	SPDT	KM2C-10B	KM2C-11B				
					DPDT	KM2C-20B	KM2C-21B	DPDT	Left Contact NO NC C1 Right Contact NO NC C2	—	Left Contact NO NC C1 Right Contact NO NC C2
			C	● Ⓡ	SPDT	KM2C-10C	KM2C-11C				
					DPDT	KM2C-20C	KM2C-21C				
	45° 3-Position	Maintained	A	Ⓛ Ⓒ Ⓡ	DPDT	KM3C-20A	KM3C-21A	DPDT	Left Contact NO NC C1 Right Contact NO NC C2	Left Contact NO NC C1 Right Contact NO NC C2	Left Contact NO NC C1 Right Contact NO NC C2
			B	Ⓛ Ⓒ ●	DPDT	KM3C-20B	KM3C-21B				
			C	● Ⓒ Ⓡ	DPDT	KM3C-20C	KM3C-21C				
			D	● Ⓒ ●	DPDT	KM3C-20D	KM3C-21D				
			E	Ⓛ ● Ⓡ	DPDT	KM3C-20E	KM3C-21E				
			G	Ⓛ ● ●	DPDT	KM3C-20G	KM3C-21G				
			H	● ● Ⓡ	DPDT	KM3C-20H	KM3C-21H				

- Key is removable at Ⓛ, Ⓒ, Ⓡ, and retained at ●, ●, ●.
- The key slot (the front of the key cylinder) is made of black plastic.
- Two keys are supplied. (For ordering spare keys, see page 3.)
- Different keys (different key nos.) are not available for KM series.

Specifications

Standard Operating Conditions	Operating temperature: −25 to +50°C (no freezing) Storage temperature: −30 to +70°C (no freezing) Operating humidity: 45 to 85% RH (no condensation)
Contact Resistance	50 mΩ maximum (initial value)
Insulation Resistance	100 MΩ minimum (500V DC megger)
Dielectric Strength	Between live and dead parts: 2,500V AC, 1 minute Between live parts of different poles: 1,000V AC, 1 minute
Mechanical Life	30,000 operations minimum
Electrical Life	30,000 operations minimum
Vibration Resistance	Damage Limits/Operating Extremes: 5 to 55 Hz, amplitude 0.5 mm
Shock Resistance	Damage Limits: 1,000 m/s^2 Operating Extremes: 100 m/s^2
Terminal Style	Solder terminal (Connectable wire: 0.75 mm^2 × 2 wires max.)
Degree of Protection	IP40 (IEC 60529)
Housing Color	Black (plastic)
Weight	10g (excluding key)

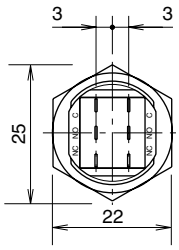
Contact Ratings (Microswitch)

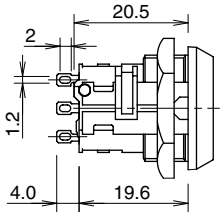
Insulation Voltage	125V
Thermal Current	3A
Operating Voltage & Current	Silver contact microswitch: 125V AC, 1A (resistive load) 30V DC, 1A (resistive load) Gold contact microswitch: 30V DC, 0.1A (resistive load)
Operating Frequency	1,800 operations/hour

- Minimum applicable load (reference value): Gold contact microswitch 24V AC/DC, 1 mA

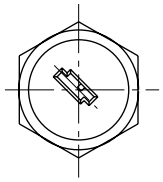
Dimensions

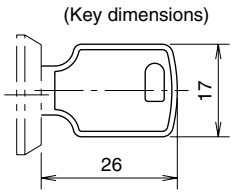
KM





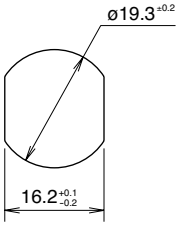
Terminal dimensions: terminal width 2.2



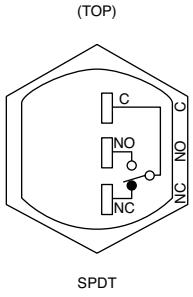


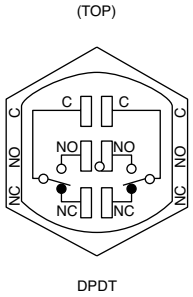
Spare Key
Ordering No.: KG9Z-SK-231PN02
Package Quantity: 2
(2.0 mm thick, Material: Nickel-plated brass)
Different keys (different key nos.) are not available.

Panel Cut-out



Terminal Arrangement
(Bottom View)





Safety Precautions

- Turn off power to the switch before installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shocks or fire hazard.
- For wiring, use wires of proper size to meet the voltage and current requirements. Improper soldering may cause overheating and fire.

Instructions

Notes on Panel Mounting

- Use an optional locking ring wrench to mount the switch in a panel cut-out. Tightening torque should not exceed 0.39 N·m. Do not use pliers. Do not tighten with excessive force, otherwise the switch may be damaged.

Wiring

- Solder the terminal at 330°C within 3 seconds, using a 60W soldering iron. Sn-Ag-Cu solder is recommended. When soldering, do not touch the switch housing with the soldering iron. Also ensure that no tensile force is applied to the terminals. Do not bend the terminals or apply excessive force to the terminals. Use a non-corrosive rosin flux.

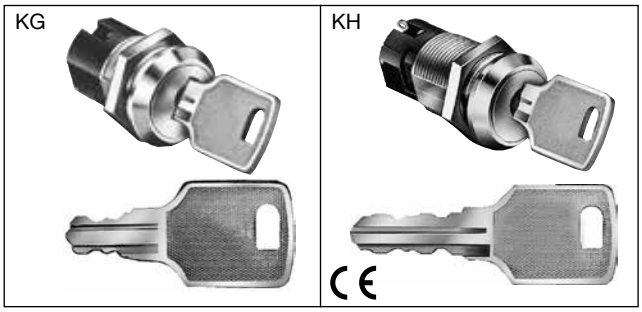
Contacts

- When switching inductive loads, contact resistance is increased by arcing. Therefore, it is recommended to connect a contact protection circuit to ensure contact reliability.
- When using NO and NC contacts of the same microswitch, avoid connections of different voltages, or connections of different types of power supplies. Failure to observe this instruction may cause a short-circuit.

KG/KH Series Miniature Key Lock Switches

Miniature, cylindrical, unibody key lock switches for mounting in ø19 mm oval hole Metal housing, and high-performance microswitch contacts

- Space-saving design: Panel depth: 29.9 mm (KG series) / 39.5 mm (KH series)
- Reliable and smooth operation
- Silver or gold contacts
- Reversible key (non-directional key)
- Two keys are supplied.
- For the KH series, different keys (different key nos.) are available (made to order). Master key is not available.



KG/KH Series

Series	Position		Key Retained at ●		No. of Contacts	Part No.		Operator Position and Contact Operation (Top View)			
						Silver Contact	Gold Contact	No. of Contacts	Left	Center	Right
KG	90° 2-Position	Maintained	A	Ⓛ Ⓡ	SPDT	KG2C-10A	KG2C-11A	SPDT	NO NC C1	—	NO NC C1
					DPDT	KG2C-20A	KG2C-21A				
			B	Ⓛ ●	SPDT	KG2C-10B	KG2C-11B				
					DPDT	KG2C-20B	KG2C-21B	DPDT	Left Contact NO NC C1 / Right Contact NO NC C2	—	Left Contact NO NC C1 / Right Contact NO NC C2
			C	● Ⓡ	SPDT	KG2C-10C	KG2C-11C				
					DPDT	KG2C-20C	KG2C-21C				
	45° 3-Position	Maintained	A	Ⓛ Ⓒ Ⓡ	DPDT	KG3C-20A	KG3C-21A	DPDT	Left Contact NO NC C1 / Right Contact NO NC C2	Left Contact NO NC C1 / Right Contact NO NC C2	Left Contact NO NC C1 / Right Contact NO NC C2
			B	Ⓛ Ⓒ ●	DPDT	KG3C-20B	KG3C-21B				
			C	● Ⓒ Ⓡ	DPDT	KG3C-20C	KG3C-21C				
			D	● Ⓒ ●	DPDT	KG3C-20D	KG3C-21D				
			E	Ⓛ ● Ⓡ	DPDT	KG3C-20E	KG3C-21E				
			G	Ⓛ ● ●	DPDT	KG3C-20G	KG3C-21G				
			H	● ● Ⓡ	DPDT	KG3C-20H	KG3C-21H				
KH	90° 2-Position	Maintained	A	Ⓛ Ⓡ	SPDT	KH2C-10A	KH2C-11A	SPDT	NO NC C1	—	NO NC C1
					DPDT	KH2C-20A	KH2C-21A				
			B	Ⓛ ●	SPDT	KH2C-10B	KH2C-11B				
					DPDT	KH2C-20B	KH2C-21B	DPDT	Left Contact NO NC C1 / Right Contact NO NC C2	—	Left Contact NO NC C1 / Right Contact NO NC C2
			C	● Ⓡ	SPDT	KH2C-10C	KH2C-11C				
					DPDT	KH2C-20C	KH2C-21C				
	45° 3-Position	Maintained	A	Ⓛ Ⓒ Ⓡ	DPDT	KH3C-20A	KH3C-21A	DPDT	Left Contact NO NC C1 / Right Contact NO NC C2	Left Contact NO NC C1 / Right Contact NO NC C2	Left Contact NO NC C1 / Right Contact NO NC C2
			B	Ⓛ Ⓒ ●	DPDT	KH3C-20B	KH3C-21B				
			C	● Ⓒ Ⓡ	DPDT	KH3C-20C	KH3C-21C				
			D	● Ⓒ ●	DPDT	KH3C-20D	KH3C-21D				
			E	Ⓛ ● Ⓡ	DPDT	KH3C-20E	KH3C-21E				
			G	Ⓛ ● ●	DPDT	KH3C-20G	KH3C-21G				
			H	● ● Ⓡ	DPDT	KH3C-20H	KH3C-21H				

- Key is removable at Ⓛ, Ⓒ, Ⓡ, and retained at ●, ●, ●.
- Two keys are supplied. (For ordering spare keys, see page 5.)
- For the KH series, different keys (different key nos.) are available (made to order). Master key is not available.
- Different keys (different key nos.) are not available for KG series.

Specifications

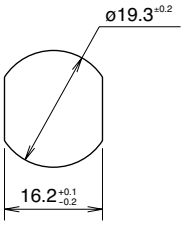
Standard Operating Conditions	Operating temperature: −25 to +50°C (no freezing) Storage temperature: −30 to +70°C (no freezing) Operating humidity: 45 to 85% RH (no condensation)
Contact Resistance	50 mΩ maximum (initial value)
Insulation Resistance	100 MΩ minimum (500V DC megger)
Dielectric Strength	Between live and dead parts: 2,500V AC, 1 minute Between live parts of different poles: 1,000V AC, 1 minute
Mechanical Life	50,000 operations minimum
Electrical Life	30,000 operations minimum
Vibration Resistance	Damage Limits/Operating Extremes: 5 to 55 Hz, amplitude 0.5 mm
Shock Resistance	Damage Limits: 1,000 m/s^2 Operating Extremes: 100 m/s^2
Terminal Style	Solder terminal (Connectable wire: 0.75 mm^2 × 2 wires max.)
Degree of Protection	IP40 (IEC 60529)
Housing Color	Chrome-plated (metallic)
Weight	KG series: 30g, KH series: 40g (excluding key)

Contact Ratings (Microswitch)

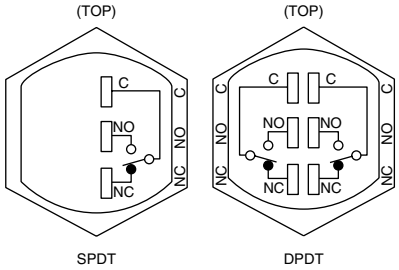
Insulation Voltage	125V
Thermal Current	3A
Operating Voltage & Current	Silver contact microswitch: 125V AC, 1A (resistive load) 30V DC, 1A (resistive load) Gold contact microswitch: 30V DC, 0.1A (resistive load)
Operating Frequency	1,800 operations/hour

• Minimum applicable load (reference value): Gold contact microswitch 24V AC/DC, 1 mA

Panel Cut-out

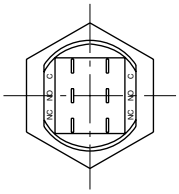


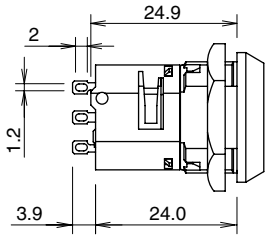
Terminal Arrangement (Bottom View)



Dimensions

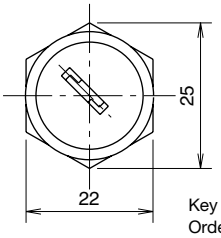
KG



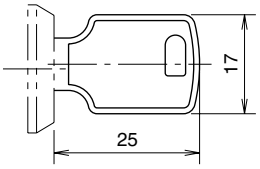


Terminal dimensions: terminal width 2.2

Top marking

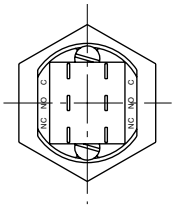


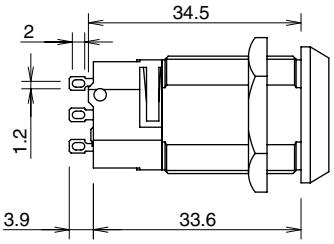
(Key dimensions)



Key
Ordering No.: KG9Z-SK-231PN02
Package Quantity: 2 (2.0 mm thick, Material: Nickel-plated brass)

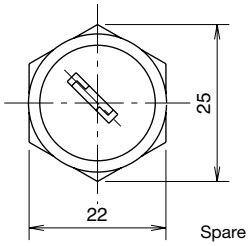
KH



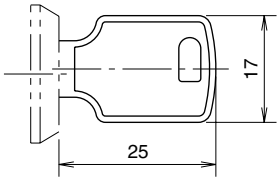


Terminal dimensions: terminal width 2.2

Top marking



(Key dimensions)



Spare Key
Ordering No.: KH9Z-SK-H100PN02
Package Quantity: 2 (2.0 mm thick, Material: Nickel-plated brass)

Safety Precautions

- Turn off power to the switch before installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shocks or fire hazard.
- For wiring, use wires of proper size to meet the voltage and current requirements. Improper soldering may cause overheating and fire.

Instructions

Notes on Panel Mounting

- Use an optional locking ring wrench to mount the switch in a panel cut-out. Tightening torque should not exceed 2.94 N·m.

Wiring

- Solder the terminal at 350°C within 3 seconds, using a 60W soldering iron. Sn-Ag-Cu solder is recommended.
- When soldering, do not touch the switch housing with the soldering iron. Also ensure that no tensile force is applied to the terminals. Do not bend the terminals or apply excessive force to the terminals.
- Use a non-corrosive rosin flux.

Contacts

- When switching inductive loads, contact resistance is increased by arcing. Therefore, it is recommended to connect a contact protection circuit to ensure contact reliability.
- When using NO and NC contacts of the same microswitch, avoid connections of different voltages, or connections of different types of power supplies. Failure to observe this instruction may cause a short-circuit.

Different Keys (Different Key Nos.)

- If a key of a different No. is inserted, the switch does not work with normal operating force. However, if the switch is forcively operated, or if the key is incompletely inserted, the switch may operate.

KN Series Miniature Key Lock Switches

Waterproof housing for mounting in ø19 mm oval hole
The key slot includes a dustproof shutter.

- Degree of protection: IP65 (IEC 60529)
- Dustproof shutter prevents entry of dust or chips.
- Stainless steel flange and shutter
- Reversible key (non-directional key)
- Two keys are supplied.

KN Series

Series	Position		Key Retained at ●		No. of Contacts	Part No.		Operator Position Contact Operation (Top View)		
						Silver Contact	Gold Contact	Left	Center	Right
KN	90° 2-Position	Main-tained	A	Ⓛ Ⓡ	SPDT	KN2C-10A	KN2C-11A	NO NC C1	—	NO NC C1
					DPDT	KN2C-20A	KN2C-21A			
			B	Ⓛ ● Ⓡ	SPDT	KN2C-10B	KN2C-11B	Left Contact NO NC C1 / Right Contact NO NC C2	—	Left Contact NO NC C1 / Right Contact NO NC C2
					DPDT	KN2C-20B	KN2C-21B			
	45° 3-Position	Main-tained	A	Ⓛ Ⓒ Ⓡ	DPDT	KN3C-20A	KN3C-21A	Left Contact NO NC C1 / Right Contact NO NC C2	Left Contact NO NC C1 / Right Contact NO NC C2	Left Contact NO NC C1 / Right Contact NO NC C2
			G	Ⓛ ● Ⓡ	DPDT	KN3C-20G	KN3C-21G			

- Key is removable at Ⓛ, Ⓒ, Ⓡ, and retained at ●Ⓛ, ●Ⓒ, ●Ⓡ.
- Two keys are supplied. (For ordering spare keys, see page 7.)
- Different keys (different key nos.) are available (made to order). Master key is not available.

Specifications

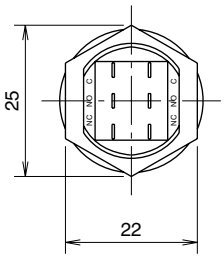
Standard Operating Conditions	Operating temperature: −25 to +50°C (no freezing) Storage temperature: −30 to +70°C (no freezing) Operating humidity: 45 to 85% RH (no condensation)
Contact Resistance	50 mΩ maximum (initial value)
Insulation Resistance	100 MΩ minimum (500V DC megger)
Dielectric Strength	Between live and dead parts: 2,500V AC, 1 minute Between live parts of different poles: 1,000V AC, 1 minute
Mechanical Life	50,000 operations minimum
Electrical Life	30,000 operations minimum
Vibration Resistance	Damage Limits/Operating Extremes: 5 to 55 Hz, amplitude 0.5 mm
Shock Resistance	Damage Limits: 1,000 m/s^2 Operating Extremes: 100 m/s^2
Terminal Style	Solder terminal (Connectable wire: 0.75 mm^2 × 2 wires max.)
Degree of Protection	IP65 (IEC 60529)
Housing Color	Chrome-plated (metallic)
Weight	45g (excluding key)

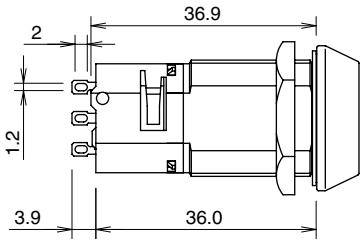
Contact Ratings (Microswitch)

Insulation Voltage	125V
Thermal Current	3A
Operating Voltage & Current	Silver contact microswitch: 125V AC, 1A (resistive load) 30V DC, 1A (resistive load) Gold contact microswitch: 30V DC, 0.1A (resistive load)
Operating Frequency	1,800 operations/hour

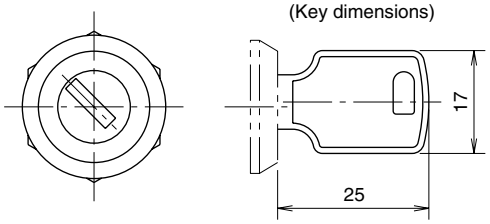
- Minimum applicable load (reference value): Gold contact microswitch 24V DC, 1 mA

Dimensions





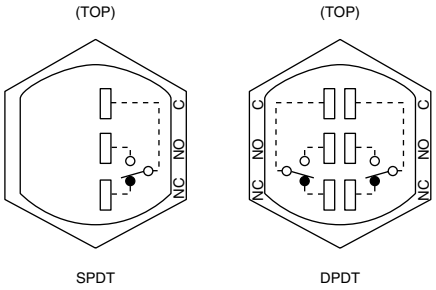
Terminal dimensions: terminal width 2.2



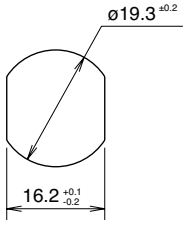
Spare Key
Ordering No.: KN9Z-SK-V00PN02
Package Quantity: 2
(1.8 mm thick, Material: Nickel-plated brass)

Terminal Arrangement

(Bottom View)



Panel Cut-out



Safety Precautions

- Turn off power to the switch before installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shocks or fire hazard.
- For wiring, use wires of proper size to meet the voltage and current requirements. Improper soldering may cause overheating and fire.

Instructions

Notes on Panel Mounting

- Use an optional locking ring wrench to mount the unit onto a panel. Tightening torque should not exceed 2.94 N·m.

Wiring

- Solder the terminal at 330°C within 3 seconds, using a 60W soldering iron. Sn-Ag-Cu solder is recommended.
- When soldering, do not touch the switch housing with the soldering iron. Also ensure that no tensile force is applied to the terminals. Do not bend the terminals or apply excessive force to the terminals.
- Use a non-corrosive rosin flux.

Contacts

- When switching inductive loads, contact resistance is increased by arcing. Therefore, it is recommended to connect a contact protection circuit to ensure contact reliability.
- When using NO and NC contacts of the same microswitch, avoid connections of different voltages, or connections of different types of power supplies. Failure to observe this instruction may cause a short-circuit.

Different Keys (Different Key Nos.)

- If a key of a different No. is inserted, the switch does not work with normal operating force. However, if the switch is forcively operated, or if the key is incompletely inserted, the switch may operate.

KL Series Miniature Key Lock Switches

High security tubular lock
Metal housing ensures high mounting strength.

- High security tubular key lock (commonly used for cash dispensers)
- A variety of key types (key Nos.) are available.
- Metal housing for mounting in ø19 mm oval hole
- High-performance microswitch contacts (gold or silver)
- Two keys are supplied.
- Custom-made keys (different key nos.) are available (made to order).

KL Series

Series	Position		Key Retained at ●		No. of Contacts	Part No.		Operator Position Contact Operation (Top View)		
						Silver Contact	Gold Contact	Left	Center	Right
KL	90° 2-Position	Maintained	B	Ⓒ Ⓡ	SPDT	**KL2S-10B**	**KL2S-11B**	NO NC C1	—	NO NC C1
					DPDT	**KL2S-20B**	**KL2S-21B**	Left Contact NO NC C1 Right Contact NO NC C2	—	Left Contact NO NC C1 Right Contact NO NC C2
	45° 3-Position	Maintained	D	Ⓛ Ⓒ Ⓡ	DPDT	**KL3S-20D**	**KL3S-21D**	Left Contact NO NC C1 Right Contact NO NC C2	Left Contact NO NC C1 Right Contact NO NC C2	Left Contact NO NC C1 Right Contact NO NC C2

- Key is removable at Ⓛ, Ⓒ, Ⓡ, and retained at ❶, ❷, ❸.
- Two keys are supplied. (For ordering spare keys, see page 9.)
- Different keys (different key nos.) are available (made to order). Master key is not available.

Specifications

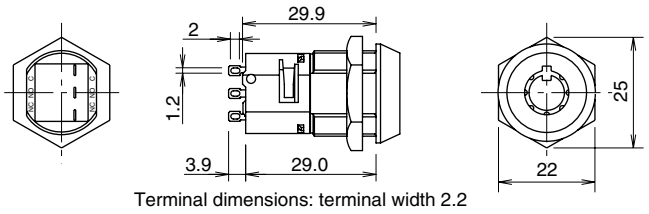
Standard Operating Conditions	Operating temperature: −25 to +50°C (no freezing) Storage temperature: −30 to +70°C (no freezing) Operating humidity: 45 to 85% RH (no condensation)
Contact Resistance	50 mΩ maximum (initial value)
Insulation Resistance	100 MΩ minimum (500V DC megger)
Dielectric Strength	Between live and dead parts: 2,500V, 1 minute Between live parts of different poles: 1,000V, 1 minute
Mechanical Life	30,000 operations minimum
Electrical Life	30,000 operations minimum
Vibration Resistance	Damage Limits/Operating Extremes: 5 to 55 Hz, amplitude 0.5 mm
Shock Resistance	Damage Limits: 1,000 m/s^2 Operating Extremes: 100 m/s^2
Terminal Style	Solder terminal (Connectable wire: 0.75 mm^2 × 2 wires max.)
Degree of Protection	IP40 (IEC 60529)
Housing Color	Chrome-plated (metallic)
Weight	45g (excluding key)

Contact Ratings (Microswitch)

Insulation Voltage	125V
Thermal Current	3A
Operating Voltage & Current	Silver contact microswitch: 125V AC, 1A (resistive load) 30V DC, 1A (resistive load) Gold contact microswitch: 30V DC, 0.1A (resistive load)
Operating Frequency	1,800 operations/hour

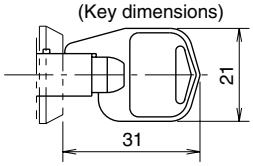
- Minimum applicable load (reference value): Gold contact microswitch 24V DC, 1 mA

Dimensions



Terminal dimensions: terminal width 2.2

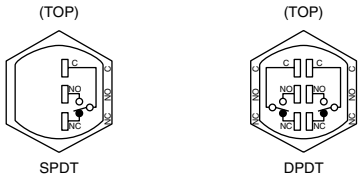
(Key dimensions)



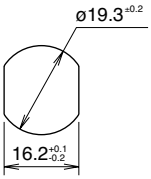
Spare Key
Ordering Part No.: KL9Z-SK-M2001
Package Quantity: 1

Terminal Arrangement

(Bottom View)



Panel Cut-out



Safety Precautions

- Turn off power to the switch before installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shocks or fire hazard.
- For wiring, use wires of proper size to meet the voltage and current requirements. Improper soldering may cause overheating and fire.

Instructions

Notes on Panel Mounting

- Use an optional locking ring wrench to mount the switch in a panel cut-out. Tightening torque should not exceed 2.94 N·m.

Wiring

- Solder the terminal at 330°C within 3 seconds, using a 60W soldering iron. Sn-Ag-Cu solder is recommended.
- When soldering, do not touch the switch housing with the soldering iron. Also ensure that no tensile force is applied to the terminals. Do not bend the terminals or apply excessive force to the terminals.
- Use a non-corrosive rosin flux.

Contacts

- When switching inductive loads, contact resistance is increased by arcing. Therefore, it is recommended to connect a contact protection circuit to ensure contact reliability.
- When using NO and NC contacts of the same microswitch, avoid connections of different voltages, or connections of different types of power supplies. Failure to observe this instruction may cause a short-circuit.

Different Keys (Different Key Nos.)

- If a key of a different No. is inserted, the switch does not work with normal operating force. However, if the switch is forcively operated, or if the key is incompletely inserted, the switch may operate.

KF Series Solenoid Key Lock Switches

IDEC's original solenoid key lock switches, suitable for control of 2-deck/3-deck mechanical parking lots

- Two types of mounting styles: ø30mm mounting that can be installed in IDEC's AGA enclosures, and M3 screw mounting type.
- DPDT or 4PDT contacts, up to 67 different keys, master key is also available. (Two keys are supplied.)
- In combination with a waterproof enclosure, the KF series provides degree of protection of IP65.

ø30 Mounting M3 Screw Mounting

KF Series

Series	Position		Key Retained at ●		Mounting Style	Solenoid Control	Solenoid Rating	No. of Contacts	Part No.		Operator Position Contact Operation (Top View)			
									Silver Contact	Gold Contact	No. of Contacts	Left	Center	Right
KF	90° 2-Position	Maintained	B	Ⓛ Ⓡ	ø30mm	Spring lock	12V DC	SPDT	**KF1L-251B**	**KF1L-211B**	SPDT	NO NC / X side	—	NO NC / X side
								DPDT	**KF1L-261B**	**KF1L-221B**				
							24V DC	SPDT	**KF1L-25B**	**KF1L-21B**				
								DPDT	**KF1L-26B**	**KF1L-22B**				
						Solenoid lock	12V DC	SPDT	**KF1F-251B**	**KF1F-211B**				
								DPDT	**KF1F-261B**	**KF1F-221B**				
							24V DC	SPDT	**KF1F-25B**	**KF1F-21B**				
								DPDT	**KF1F-26B**	**KF1F-22B**				
					M3 screw	Spring lock	12V DC	SPDT	**KF2L-251B**	**KF2L-211B**	DPDT	Left Contact NO NC / Right Contact NO NC / Y side X side	—	Left Contact NO NC / Right Contact NO NC / Y side X side
								DPDT	**KF2L-261B**	**KF2L-221B**				
							24V DC	SPDT	**KF2L-25B**	**KF2L-21B**				
								DPDT	**KF2L-26B**	**KF2L-22B**				
						Solenoid lock	12V DC	SPDT	**KF2F-251B**	**KF2F-211B**				
								DPDT	**KF2F-261B**	**KF2F-221B**				
							24V DC	SPDT	**KF2F-25B**	**KF2F-21B**				
								DPDT	**KF2F-26B**	**KF2F-22B**				
	45° 3-Position	Maintained	D	Ⓛ Ⓒ Ⓡ	ø30mm	Spring lock	12V DC	DPDT	**KF1L-361D**	**KF1L-321D**	DPDT	Left Contact NO NC / Right Contact NO NC / Y side X side	Left Contact NO NC / Right Contact NO NC / Y side X side	Left Contact NO NC / Right Contact NO NC / Y side X side
							24V DC	DPDT	**KF1L-36D**	**KF1L-32D**				
						Solenoid lock	12V DC	DPDT	**KF1F-361D**	**KF1F-321D**				
							24V DC	DPDT	**KF1F-36D**	**KF1F-32D**				
					M3 screw	Spring lock	12V DC	DPDT	**KF2L-361D**	**KF2L-321D**				
							24V DC	DPDT	**KF2L-36D**	**KF2L-32D**				
						Solenoid lock	12V DC	DPDT	**KF2F-361D**	**KF2F-321D**				
							24V DC	DPDT	**KF2F-36D**	**KF2F-32D**				

- Key is removable at Ⓛ, Ⓒ, Ⓡ, and retained at ❶, ❷, ❸.

Spring lock: While the solenoid is not energized, the key can be inserted, but cannot be removed.
While the solenoid is energized or the button is depressed, the key can be inserted or removed.
Solenoid lock: While the solenoid is not energized, the key can be inserted or removed.
While the solenoid is energized, the key cannot be inserted or removed.

- If other contact configurations are needed, key insertion/removal patterns, or different key numbers other than the above, contact IDEC for more information.
- Two keys are supplied. (For ordering spare keys, see page 12.)
- Custom-made keys (with user's trademark, etc.) are also available. Contact IDEC for more information.

Contact Ratings (Microswitch)

Insulation Voltage	250V
Thermal Current	5A
Operating Voltage & Current	Silver contact microswitch: 250V AC, 5A (resistive load) 125V AC, 5A (resistive load) 30V DC, 5A (resistive load) Gold contact microswitch: 30V DC, 0.1A (resistive load)
Switching Frequency	900 operations/hour

- AC inductive load PF = 0.6 to 0.7
- DC inductive load L/R = 7 ms or less
- Minimum applicable load (reference value): Gold contact microswitch 24V DC, 1 mA

Solenoid Ratings

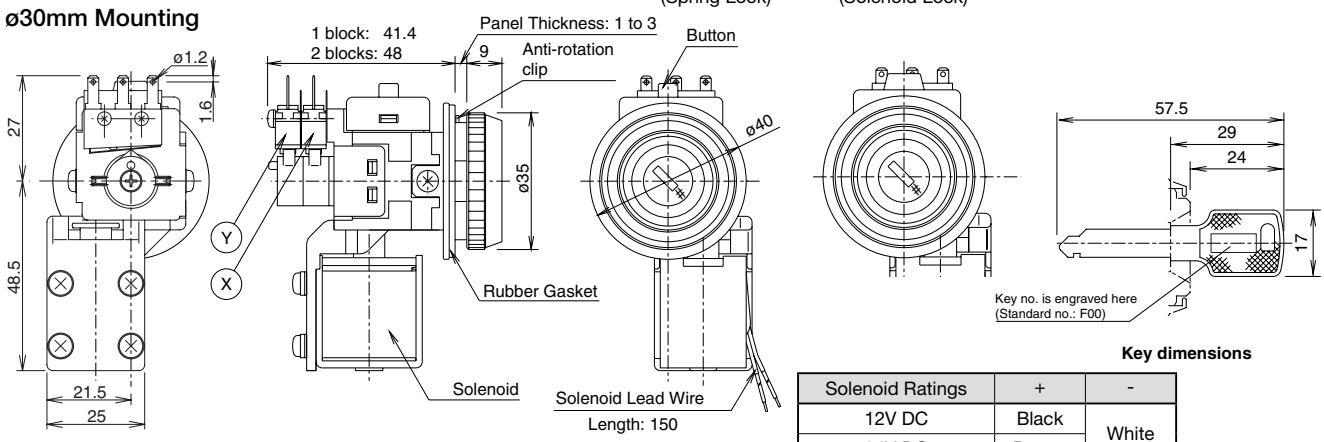
Rated Insulation Voltage	60V	
Rated Operating Voltage	12V DC ±10%	24V DC ±10%
Rated Insulation Current	273 mA	133 mA
Coil Resistance	44Ω	180Ω
Pickup Voltage	90% of rated voltage maximum (at 20°C)	
Dropout Voltage	10% of rated voltage minimum (at 20°C)	
Maximum Continuous Applicable Voltage	110% of rated voltage	
Maximum Continuous Voltage Application Time	48 hours	
Power Consumption	Approx. 3.3W	Approx. 3.2W
Switching Frequency	900 operations/hour	

Specifications

Standard Operating Conditions		Operating temperature: −25 to +50°C (no freezing) Storage temperature: −45 to +80°C (no freezing) Operating humidity: 45 to 85% (no condensation)
Contact Resistance		50 mΩ maximum (initial value)
Insulation Resistance		100 MΩ minimum (500V DC megger)
Dielectric Strength		Between live and dead metal parts: 1500V AC, 1 minute Between live metal parts of different poles: 1000V AC, 1 minute
Shock Resistance	Operating Extremes	100 m/s^2
	Damage Limits	1000 m/s^2
Vibration Resistance	Operating Extremes	5 to 55 Hz, 0.5 mm
	Damage Limits	30 Hz, amplitude 3.0 mm (1 hour each in 6 directions)
Mechanical Life		50,000 operations minimum (key insertion/removal: 10,000 minimum)
Electrical Life		50,000 operations minimum
Terminal Style		Solder/tab terminal #110
Degree of Protection		IP65 (IEC 60529)
Operating Parts Strength	Rotation	2.5 N·m
	Key Removal	200N (for solenoid lock)
Terminal Strength		10N or more
Weight (Approx.)		275g (ø30mm mounting type, DPDT, excluding key)

Dimensions

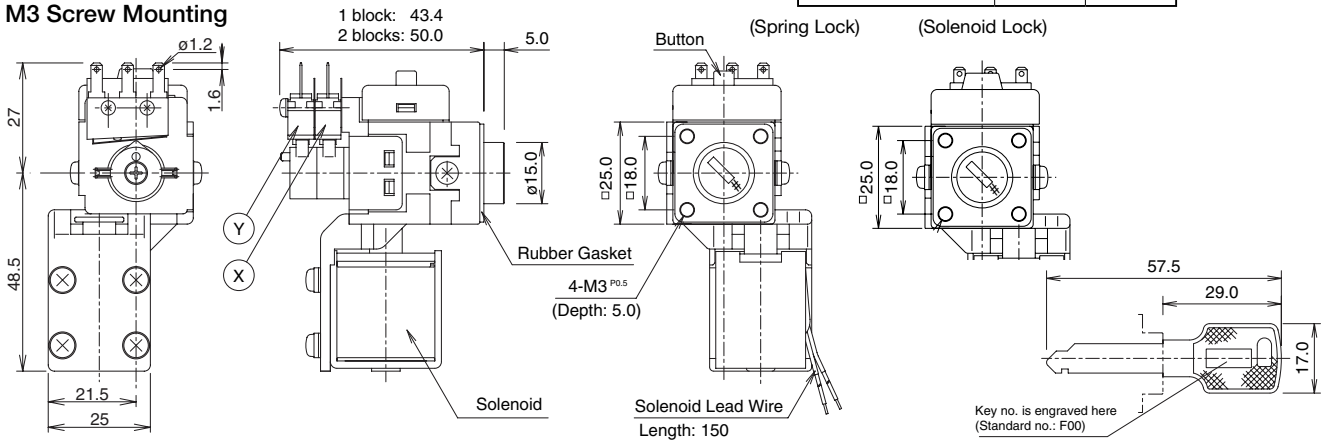
ø30mm Mounting



Key dimensions

Solenoid Ratings	+	-
12V DC	Black	White
24V DC	Brown	

M3 Screw Mounting



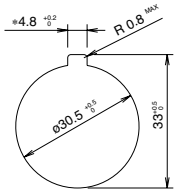
Key dimensions

Solenoid Ratings	+	-
12V DC	Black	White
24V DC	Brown	

KF Series Solenoid Key Lock Switches

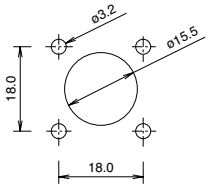
Panel Cut-out

ø30mm Mounting



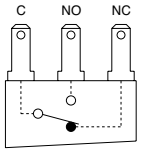
* The 4.8 mm recess is for preventing rotation and is not necessary when a nameplate or anti-rotation clip is not used.

M3 Screw Mounting

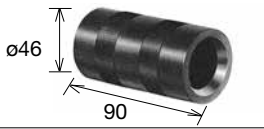
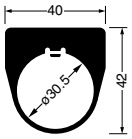
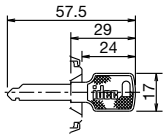
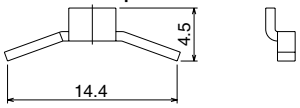


Terminal Arrangement

(Bottom View)



Accessories (Optional)

Name	Specifications	Part No.	Ordering No.	Package Quantity
Locking Ring Wrench 	Rubber	OR-12	OR-12	1
Nameplate 	Aluminum 1.2 mm thick	NA-0	NA-0	1
			NA-0PN10	10
Key 	Brass (nickel-plated) 1.8 mm thick	KF9Z-SKF00	KF9Z-SKF00	1
Anti-rotation Clip 	Metallic	KF9Z-R	KF9Z-RPN10	10

Safety Precautions

- Turn off power to the switch before installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shocks or fire hazard.
- For wiring, use wires of proper size to meet the voltage and current requirements. Improper soldering or failure to tighten the terminal screw may cause overheating and fire.

Instructions

Notes on Panel Mounting

- ø30mm Mounting
- Fasten the bezel securely with the locking ring wrench (OR-12). If the anti-rotation clip is not required, remove it in advance.
- M3 Screw Mounting
- Select a proper screw length so that the screw penetrates the housing between 3 mm and 5 mm, in consideration of the mounting panel thickness. For example, when the panel thickness is 2 mm, select M3 × 5 to 7 screws. If the screw is too long, the key lock switch cannot be mounted, and the waterproof characteristics may be degraded.

Wiring

- Solder the terminal at 330°C within 3 seconds, using a 60W soldering iron. Sn-Ag-Cu solder is recommended.
- When soldering, do not touch the switch housing with the soldering iron. Also ensure that no tensile force is applied to the terminals. Do not bend the terminals or apply excessive force to the terminals.
- Do not apply excessive force to the solenoid lead wire.
- Use a non-corrosive rosin flux.

Contacts

- When switching inductive loads, contact resistance is increased by arcing. Therefore, it is recommended to connect a contact protection circuit to ensure contact reliability.
- When using NO and NC contacts of the same microswitch, avoid connections of different voltages, or connections of different types of power supplies. Failure to observe this instruction may cause a short-circuit.

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