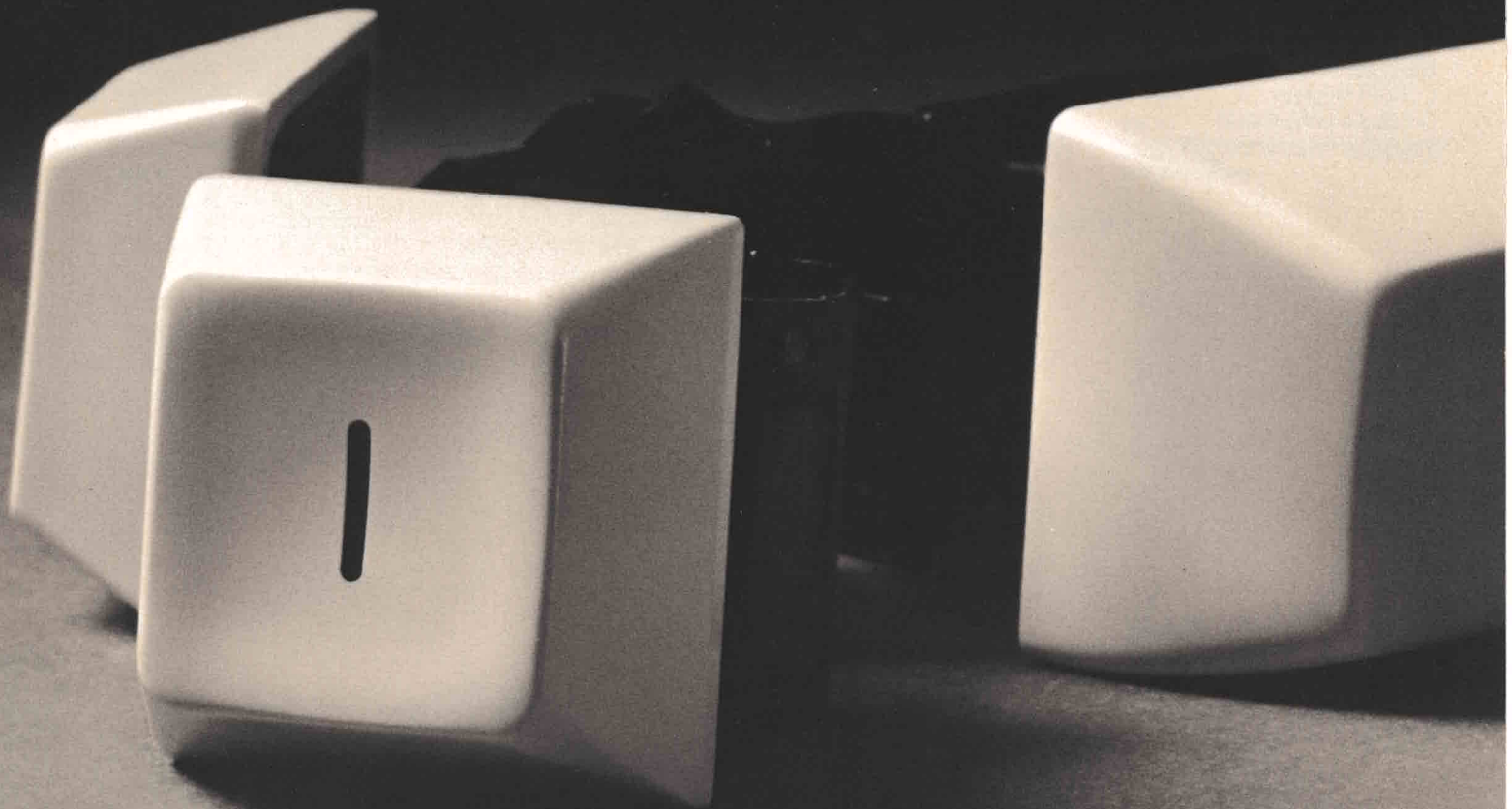


DC-50/DC-60 Key Switches



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 **Datanetics Corporation**
A Subsidiary of International Telephone and Telegraph Corporation

DC-60 Series Key Switches The Datanetics DC-60 Key Switches are value engineered to achieve the highest possible performance at much lower cost than conventional mechanical switches.

Tested to over 15 million operations, this series of easy-to-assemble key switches offers a choice of three low profiles, making them ideal for almost any application—from desktop calculators to sophisticated high-throughput communications terminals.

Features of the DC-60 Series include:

- Flexible mounting positions
- Trifurcated gold-inlaid stainless steel switch contacts for low bounce and low resistance
- Easy assembly with no external hardware
- Tactile feedback
- Choice of three low profiles

Datanetics pioneered the development of keyboard and key switch technology and is a supplier to the world's major calculator, business machine and computer peripheral companies.

Datanetics will be happy to send you further information or have a representative call to answer any questions you may have.

SPECIFICATIONS

Electrical

Contact Ratings (resistive load)	
Volt Amp Range	5 to 200 mv Amp
Current Range	0.05 to 100 ma
Voltage Range	0.5 to 300V dc
Contact Resistance	1 ohm max, 0.1 ohm typical
Contact Bounce	5 msec max, 0.5 msec typical
Contact Configuration	SPST, normally open
Insulation Resistance	100 megohms min at 100V (100 megohms typical)

Mechanical

Operating Force (momentary action)	2.5 oz. ± 0.5 oz. (70 gm)
(alternate action)	3.5 oz. ± 0.5 oz. (99 gm)
Pretravel	0.060 in. ± 0.015 in. (1.78 mm ± 0.38 mm)
Total Travel	0.125 in. ± 0.010 in. (3.18 mm ± 0.25 mm)
Mounting	Snap-in, solder, or heat stake
Minimum Spacing	5/8 in. (15.87 mm)
Operating Life (momentary action)	15 million actuations
(alternate action)	50,000 actuations

Materials

Key Stem	Self-lubricating DELRIN™
Housing	Thermoplastic
Contacts	Gold-inlaid stainless steel
Terminals	Solder-alloy-inlaid stainless steel
Key Caps (optional)	Two-color molded ABS

Environmental

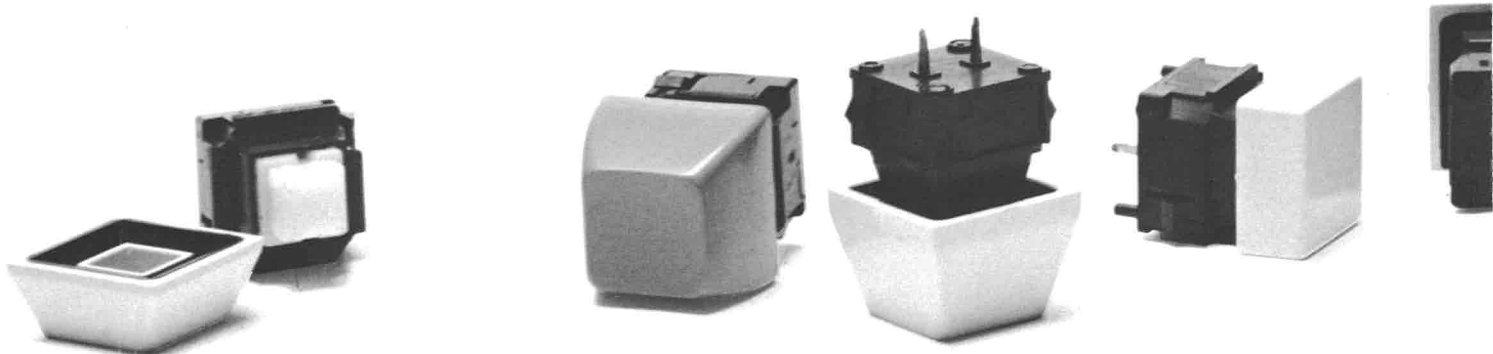
Operating Temperature	+32°F to +160°F (0°C to +71°C)
Storage Temperature	-40°F to +160°F (-40°C to +71°C)
Relative Humidity	5% to 95% non-condensing
Vibration. Remains open while subjected to 10-55 Hz	
	at 0.06 in. (1.5 mm) displacement
Shock. Remains open and operable under 50 G's for 11 msec.	

Options

1. Higher operating force
2. Omission of heat-stakable guide posts
3. Custom key stem configurations
4. Special keytops and colors
5. L.E.D. illumination

Available Configurations

Single-pole, Single-throw, momentary action	
DC-61-01	Lowest profile, with guide posts
DC-61-02	Lowest profile, without guide posts
DC-61-03	Lower profile, with guide posts
DC-61-04	Lower profile, without guide posts
DC-61-05	Low profile, with guide posts
DC-61-06	Low profile, without guide posts
Single-pole, Single-throw, alternate action	
DC-62-03	Lower profile, with guide posts
DC-62-04	Lower profile, without guide posts
DC-62-05	Low profile, with guide posts
DC-62-06	Low profile, without guide posts
Test data upon request	



Assembly 3 Possible Switch Mountings:

1. To the printed circuit board (p.c.b.) directly by its solder terminals, using the optional guide posts to orient the switch;
2. Snapped into a 0.583-inch square hole in a .062-inch (1.57 mm) thick bezel and retained by its molded-in mounting clips. (Guide posts may be omitted with this mounting method.)
3. Hand Solder: Use iron with 700°F tip and activated resin core solder Sn63 type RA per QQ-S-571
4. Flow Solder: Use Type RA resin flux with 12.5% solids in halide free activator such as Alpha Metals TL33M. Use Sn 60 solder per QQ-S-571 at 500°F. Adjust speed through solder wave (nominally 0.5 inches per second) to achieve 200°F on upper surface of PCB.

DC-50 Series Key Switches The Datanetics DC-50 Key Switches are quality engineered to assure the same high performance you'd expect from the more expensive reed or solid-state switches.

This series' exceptional reliability and outstanding performance (tested to at least 100 million operations!) is achieved through Datanetics' patented diaphragm process which sandwiches two gold-plated contacts between Mylar* and stainless steel to permanently protect them from damage and environmental contamination.

Features of the DC-50 Series include:

- Large key-cap library
- Tease-proof action
- Tactile feedback
- Contact bounce less than 2 msec
- Tested to 100 million cycles

Datanetics pioneered the development of keyboard and key switch technology and is a supplier to the world's major calculator, business machine and computer peripheral companies.

Datanetics will be happy to send you further information or have a representative call to answer any questions you may have.

* A registered trademark of Du Pont Corporation.

SPECIFICATIONS

Electrical

Contact Ratings (resistive load)	
Volt-Amp Range	0.3 to 50 MVA
Current Range	0.3 to 10 ma
Voltage Range	0.5 to 30 VDC
Contact Resistance	0.200 ohm maximum (0.050 ohm typical)
Contact Bounce	2.0 ms maximum (0 ms typical)
Insulation Resistance	100 megohm minimum at 100 VDC (1,000 megohms typical)
Capacitance	10 pf maximum at 1 KHz (5 pf typical)

Mechanical

Contacts	Gold-plated copper alloy
Minimum Key Switch Spacing	0.625 in. (15.87 mm)
Pretravel (to make point)	0.110 ± 0.015 in. (2.8 ± 0.38 mm)
Total travel	0.180 ± 0.010 in. (4.57 ± 0.25 mm)
Release Point (above make point)	0.040 ± 0.010 in. (1.01 ± 0.25 mm)
Operating Life	100,000,000 actuations
Alternate Action	50,000 actuations

Environmental

Operating Temperature	+32° to +140°F (0° to +60°C)
Storage Temperature	-32° to +160°F (-35° to +71°C)
Relative Humidity	5% to 95% non-condensing
Vibration	10-55Hz at 0.06 in. (1.5 mm) displacement
Shock	15 G's for 11 msec.

Physical

Weight	0.17 oz. (5 gm) maximum
Terminals	Pre-tinned; 0.160 in. (4.06 mm) nominal

OPTIONS

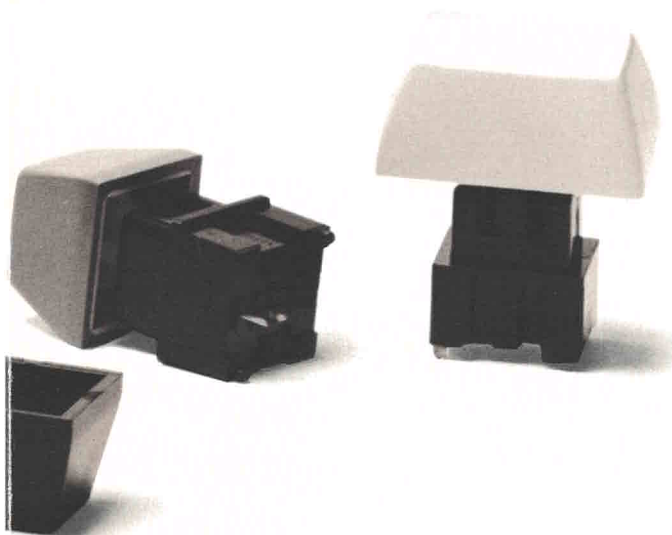
1. High Force Return Spring.
2. 12° Angled Key Stem for stepped keyboard application.
3. Extensive library of double shot key caps.
4. Relegendable key caps.
5. L.E.D. illumination.
6. Other options available—Contact factory



SPECIFIC SWITCH MODEL CONFIGURATION

- DC-51-01—Single Pole, Momentary Action Switch
 - Contact Arrangement Single pole, normally open (Form A)
 - Operating Force 3 ± 0.5 oz. (84 ± 15 gm)
- DC-51-03—Single Pole, Alternate Action Switch
 - Contact Arrangement Single pole, normally open (Form A)
 - Travel to Latch Position 0.110 ± 0.01 in. (2.8 ± 0.38 mm)
 - Operating Force to Latch Position 4.5 ± 0.5 oz. (125 ± 15 gm)
 - Release Force 5.5 ± 0.5 oz. (155 ± 15 gm)
- DC-51-04—Double Pole, Momentary Action Switch
 - Contact Arrangement Double pole, normally open (Form A)
 - Operating Force 4.5 ± 0.5 oz. (122 ± 15 gm)
- DC-51-41—Single Pole, Illuminated Momentary Action Switch
 - Contact Arrangement Single pole, normally open (Form A)
 - Operating Force 3 ± 0.5 oz. (84 ± 15 gm)
 - Lamp Replaceable T-1 wire terminal
 - Lamp Voltage 5 VDC
 - Lamp Current 115 ma
- DC-51-43—Single Pole, Illuminated Alternate Action Switch
 - Contact Arrangement Single pole, normally open (Form A)
 - Travel to Latch Position 0.110 ± 0.01 in. (2.8 ± 0.38 mm)
 - Operating Force to Latch Position 4.5 ± 0.5 oz. (125 ± 15 gm)
 - Release Force 5.5 ± 0.5 oz. (155 ± 15 gm)
 - Lamp Replaceable T-1 wire terminal
 - Lamp Voltage 5 VDC
 - Lamp Current 115 ma
- DC-51-44—Double Pole, Illuminated Momentary Action Switch
 - Contact Arrangement Double pole, normally open (Form A)
 - Operating Force 4.5 ± 0.5 oz. (122 ± 15 gm)
 - Lamp Replaceable T-1 wire terminal
 - Lamp Voltage 5 VDC
 - Lamp Current 115 ma

Assembly Switch Mounting: See recommended mounting dimensions. **WARNING:** Proper mounting screws, available only from Datanetics, must be used or damage may result.



DC-60 Series Switches

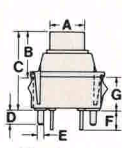


Fig. 1
DC-61-01

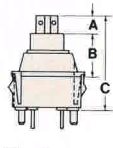


Fig. 2
DC-61-03

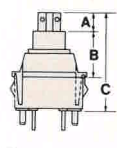


Fig. 3
DC-61-05

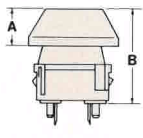


Fig. 4
DC-61-01

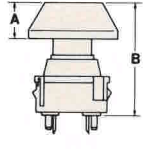


Fig. 5
DC-61-03

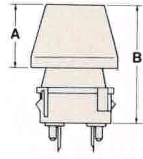


Fig. 6
DC-61-05

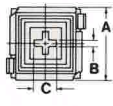


Fig. 7
Top View

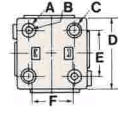


Fig. 8
Bottom View

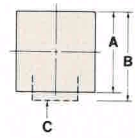


Fig. 9

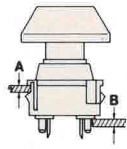


Fig. 10

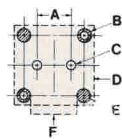


Fig. 11
Circuit Board,
PC Mounting
with Guide Posts

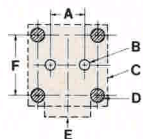


Fig. 12
Circuit Board,
Panel Mount

DC-50 Series Switches

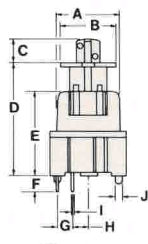


Fig. 13

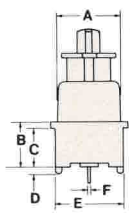


Fig. 14

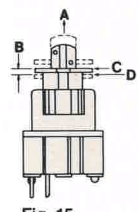


Fig. 15
Key Switch
Hysteresis

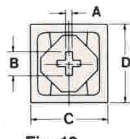


Fig. 16
Top View

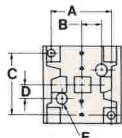


Fig. 17
Bottom View

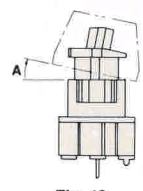


Fig. 18
12° Key Stem

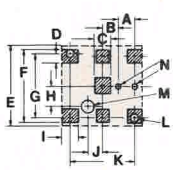


Fig. 19
Circuit Board,
Single Pole
Key Switch

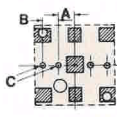


Fig. 20
Circuit Board,
Double Pole
Key Switch

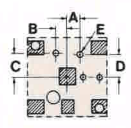
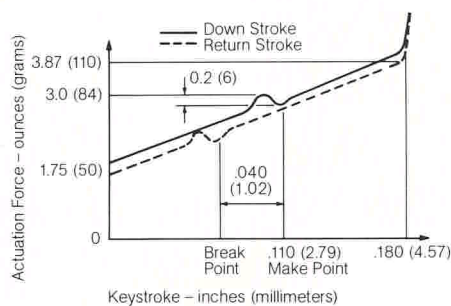


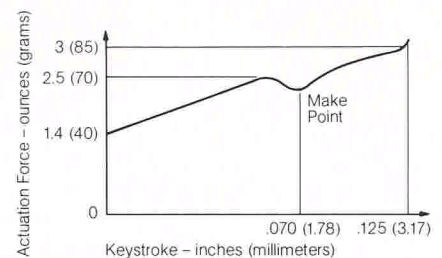
Fig. 21
Circuit Board,
Lamp Terminal
Locations

	A	B	C	D	E	F	G	H	I	J
Fig. 1	.275 (6.99)	.380 (9.65)	.660 (16.76)	.040 (1.02)	.057 DIA. (1.45)	.170 (4.32)	.285 (7.24)			
Fig. 2	.155 (3.94)	.340 (8.64)	.775 (19.18)							
Fig. 3	.155 ± .005 (3.94 ± .13)	.398 (10.12)	.831 (21.10)							
Fig. 4	.312 (7.92)	.770 (19.56)								
Fig. 5	.312 (7.92)	.925 (23.50)								
Fig. 6	.500 (12.70)	.995 (25.27)								
Fig. 7	.622 (15.80)	.048 ± .001 (1.22 ± .03)	.192 ± .002 TYP. (4.88 ± .05)							
Fig. 8	PAD .093 DIA. (2.63)	FIG. 1-E	STAND OFF .120 DIA. TYP. (3.05)	.575 SQ. (14.61)	.440 TYP. (11.18)	.260 (6.60)				
Fig. 9	.587 SQ. (14.91)	.706	FOR ALTERNATE ACTION ONLY							
Fig. 10	MTG. PANEL .062 (1.57)	PC BOARD .062 (1.57)								
Fig. 11	.250 (6.35)	GUIDE POSTS .062 DIA. (1.57)	TERMINALS .062 DIA. MIN. (1.57)	SW. OUTLINE	SUPPORT PADS ON BOTTOM OF KEYSWITCH	FOR ALTERNATE ACTION ONLY				
Fig. 12	.250 (6.35)	TERMINALS .062 DIA. MIN. (1.57)	SW. OUTLINE	SUPPORT PADS ON BOTTOM OF KEYSWITCH	FOR ALTERNATE ACTION ONLY	.440 TYP. (11.18)				
Fig. 13	.495 ± .005 (12.57 ± .127)	.450 SQ. (11.43)	.188 ± .005 (4.78 ± .127)	.900 ± .010 (22.86 ± .25)	.667 ± .007 (16.94 ± .175)	.130 NOM. (3.30)	.125 NOM. (3.18)	.125 NOM. (3.18)	.025 TYP. (.635)	.062 ± .001 DIA. (1.57 ± .025) 2 PLS.
Fig. 14	.495 ± .005 (12.57 ± .127)	.350 ± .003 (8.89 ± .075)	.308 ± .003 (7.82 ± .075)	.060 ± .003 (1.52 ± .075)	.556 ± .005 (14.12 ± .127)	.025 TYP. (.635)				
Fig. 15	RELEASE	HYSTERESIS	BREAK	MAKE						
Fig. 16	.048 ± .001 TYP. (1.22 ± .025)	.192 ± .002 TYP. (4.88 ± .050)	.620 ± .005 (15.75 ± .127)	.620 ± .005 (15.75 ± .127)						
Fig. 17	.494 (12.48)	.160 (4.06) 2 PLS.	.500 ± .004 (12.70 ± .102)	.110 (2.79) 2 PLS.	MTG. HOLE FOR SELF-TAPPING SCREW					
Fig. 18	12° ANGLE									
Fig. 19	.125 (3.18)	.125 (3.18)	.125 SQ. (3.18)	.063 TYP. (1.60)	.620 REF SQ. (15.75)	.556 (14.12)	.494 (12.42)	.160 (4.06)	.125 (3.18)	.110 (2.79)
	K	.500 (12.70)	L	M		N				
Fig. 20	.125 (3.18)	.125 (3.18)	.046 ± .004 DIA. (1.17) 2 PLS.							
Fig. 21	.110 (2.79)	.100 (2.54)	.195 (4.95)	.175 (4.45)	.046 MIN. DIA. (1.17)					

**Force/Stroke
Diagram
DC-50 Series
Switches**



**Force/Stroke
Diagram
DC-60 Series
Switches**



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Datanetics manufactures Key Switches, Touchboards, Datasel, Custom and Standard Keyboards.

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