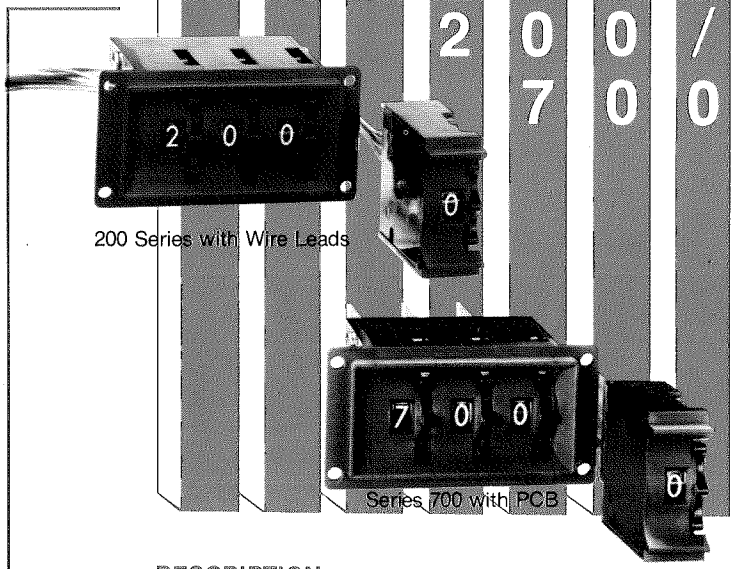


200 Series with Wire Leads

Series 700 with PCB

Series Miniswitches®

QPL approved to MIL-S-22710/15 and MIL-S-22710/20
8, 10, 12 and 16 standard dial positions
Rear mounted
Switch O.D. size 12.7 (.500) wide x 29.21 (1.15) high
Representative or factory direct

When ordering qualified switches in accordance to MIL-S-22710 you must state this requirement on your order for proper processing by the factory.

DESCRIPTION

The Series 200 and 700 Miniswitch® are engineered for hostile environments. All switching elements are enclosed in a chamber which is completely sealed by an "O" ring around the actuator shaft, and a window that seals the front of the case. The back of the case is potted around the wire leads of the Series 200 and around the PCB of the Series 700.

Both series are identical except for their termination features and are impervious to sand, dust, salt spray, high humidity or temperature and explosive atmospheres.

FEATURES

- QPL approved to MIL-S-22710/15 and MIL-S-22710/20
- *Special dial characters
- Factory installed dial stops
- *Fully sealed switch chamber, and panel sealing on request
- *Double modules
- *19.05 (.750) and 25.4 (1.0) message units
- 6.35 (.250) spacer
- *Optional markings on switch case and spacers
- *Lighted decimal on spacer
- Replaceable lighting
- *RFI shielding
- *Provisions for mounting components (Series 700)

*See switch parameters for details and consult factory for ordering information.

SPECIFICATIONS

MECHANICAL

Operating force: 7 to 14 ounces.
Life: Over 1,000,000 detent operations at rated temperature and electrical loads.
Dial character height: .170" on 8 or 10 position units, .143" on 12 position units, .120" on 16 position units.
Weight: .50 ounce per module (approximately).

ELECTRICAL:

Rated electrical loads: 28V AC or 28V DC at 125 milliamps. Non-switching 3 amps max.
Contact resistance: Series 200, 200 milliohms max.; Series 700, 160 milliohms max.
Insulation resistance: 1000 megohoms.
Dielectric strength: 750 VRMS.

ENVIRONMENTAL:

Shock: 100 G's per MIL-STD-202, Method 213, Test Condition I.
Vibration: 15 G's at 70-2000Hz; .06" double amplitude at 0-70Hz. (Ref: MIL-STD-202, Method 204, Test Condition B.)
Altitude: 70,000 feet with corresponding derating of dielectric strength to 250 volts.
Operating temperature: −65°C to +85°C, unlighted versions only. −65°C to +71°C 5V, −65°C to +65°C 28V, lighted.
Moisture resistance: Per MIL-STD-202, Method 106.
Thermal shock: Per MIL-STD-202, Method 107, Test Condition A.
Salt spray: Per MIL-STD-202, Method 101, Test Condition B.
Explosion proof: Per MIL-STD-202, Method 109. (per MIL-S-22710, Method 1.)
Sand and dust: Per MIL-STD-202, Method 110, Test Condition B. (Sealed modules only.)

MATERIALS:

Plastic parts: Thermoplastic (polycarbonate, nylon or teflon as required).
Printed circuit board: Laminate per MIL-P-13949, Type GF, plated with nickel per Fed. Spec. QQ-N-290, Class 2, and gold plated per MIL-G-45204, Type 11, Class 1.
Contacts: Precious metal alloy.
Brush base and detent spring: Beryllium copper.
Hardware: Corrosion protected or corrosion resistant steel.

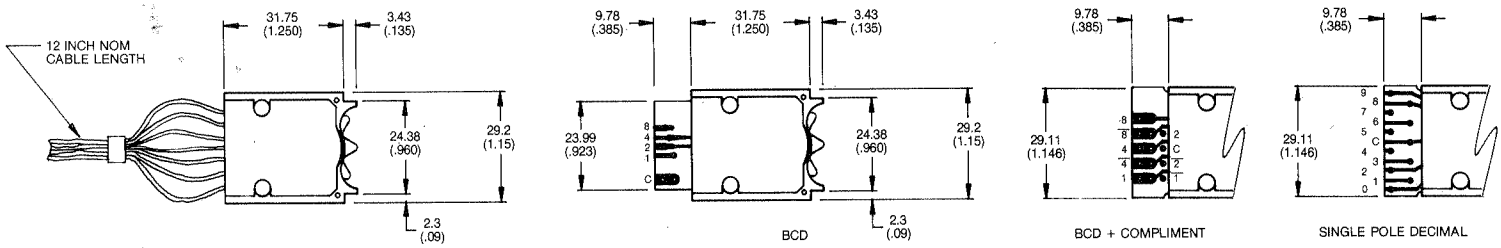
IMPORTANT NOTICE:

Do not allow flux or cleaning agent to enter switch. Use only 40% isopropyl alcohol in distilled water for cleaning agents. For additional information about recommended cleaning methods, contact Digitran.

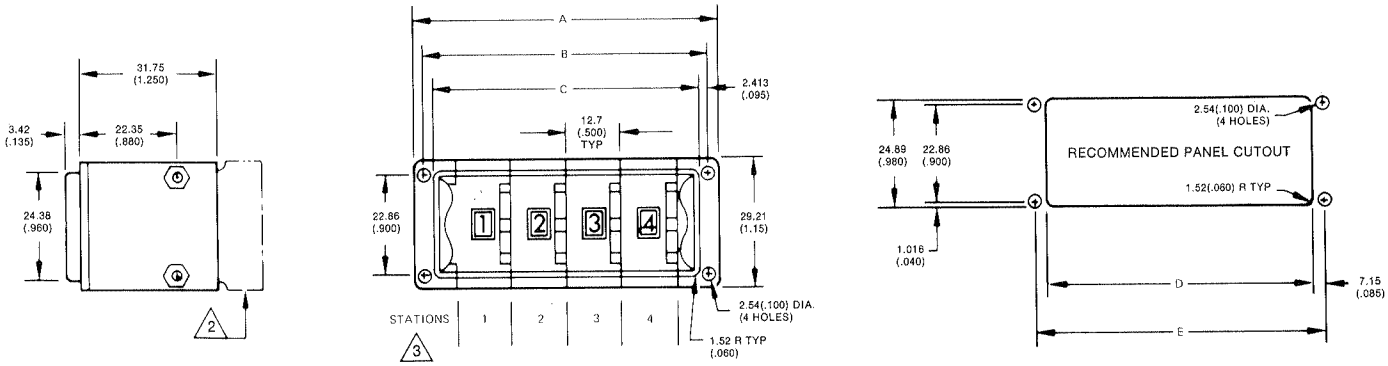
TRUTH TABLE CODES SERIES 200/700

Truth Tables Positions	001 2	002 8	003 8	004 8	006 8	007 8	008 10	011 10	013 10	014 10	016 10	017 10	021 10	022 10	023 10	024 10	025 10	038 10	039 10	041 12	043 12	047 16	048 16	049 16	050 16
Code Series																									
• 02 = 200	•	•	—	•	•	•	•	—	•	•	•	•	—	—	•	—	•	—	—	—	•	—	—	—	—
X = wire leads — 200 Series only	X	X	—	X	X	X	X	—	X	X	X	X	—	—	X	—	X	—	—	—	X	—	—	—	—
• 07 = 700	•	•	—	•	•	•	•	•	•	•	•	•	—	•	•	—	•	•	•	•	•	•	•	—	•
PC Terminations per Truth Table Code	S — — L	S P W —	— — — —	S — — L	S — — L	S P W —	S P W —	S — — —	S P W L	S — — L	S P W L	S P W —	— — — —	— — — L	S — — —	— — — —	S — — —	S — — —	S — — —	S — — —	S — — —	S P W —	— — — L	— — — —	S P W —

SERIES 200 SERIES 700



TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 200/700 MINISWITCH®



How to order standard switch modules

See page 79 for Assembly Ordering Instructions

All spaces must be filled for a complete part (switch) number

Example: 02/025/X/NS/S/F/G

Series

02 = 200

07 = 700

Truth Table Code

See Truth Table codes for 8, 10, 12 or 16 positions. (700 only)

PC Terminations

Series 700 only

S = Direct solder (Standard)

P = Pin terminals

W = Wire wrap

L = Direct solder with diode provisions

M = Solder pins with diode provisions

N = Wire wrap with diode provisions

Series 200 only

X = Wire leads standard 12" nominal

Stops ***

NS = No stops.

For stops show first and last position.

(i.e.; 3 9 the dial will read 3 through 9)

Lighting*

COLOR	LAMP VOLTAGE
O = No Lighting	
E = Clear	5
G = Clear	28
H = Red	5
K = Red	28

Z = Lighting provisions red filter no lamp.

Y = Lighting provisions clear filter no lamp.

Color **

F = Matte black case, satin black dial, white characters.

Dial Options

S = Standard dial characters.

A = 0-9, A-F (16 position only).

B = –, + repeating

C = 0, 5 repeating

Not all options are available in all series or codes. Some tooling charges may be required.

*When ordering a lighted switch, top lighting is standard. For other positions consult factory.

**For nonstandard colors and combinations consult factory.

*** For stops on 12 or 16 position switches see modified standard ordering instructions, page 78, or consult factory.

Notes 1 — For nonstandard switch options and features not covered in the how to order chart, see modified ordering instruction section, page 78, or consult factory.

RECOMMENDED ASSEMBLY PANEL CUTOUT DIMENSIONS

Number of 12.7 (.5") Stations	A	B	C	D	E
1	32.0(1.26)	27.7(1.09)	22.9(.90)	23.4(.92)	27.7(1.09)
2	44.7(1.76)	40.4(1.59)	35.6(1.40)	36.1(1.42)	40.4(1.59)
3	57.4(2.26)	53.1(2.09)	48.3(1.90)	43.8(1.92)	53.1(2.09)
4	70.1(2.76)	65.8(2.59)	61.0(2.40)	61.5(2.42)	65.8(2.59)
5	82.8(3.26)	78.5(3.09)	73.7(2.90)	74.2(2.92)	78.5(3.09)
6	95.5(3.76)	91.2(3.59)	86.4(3.40)	86.9(3.42)	91.2(3.59)
7	108.2(4.26)	103.9(4.09)	99.1(3.90)	99.6(3.92)	103.9(4.09)
8	120.9(4.76)	116.6(4.59)	111.8(4.40)	112.3(4.42)	116.6(4.59)
9	133.6(5.26)	129.3(5.09)	124.5(4.90)	125.0(4.92)	129.3(5.09)
10	146.3(5.76)	142.0(5.59)	137.2(5.40)	137.7(5.42)	142.0(5.59)
CONSULT DIGITRAN FOR DIMENSIONS ON LONGER ASSEMBLIES					

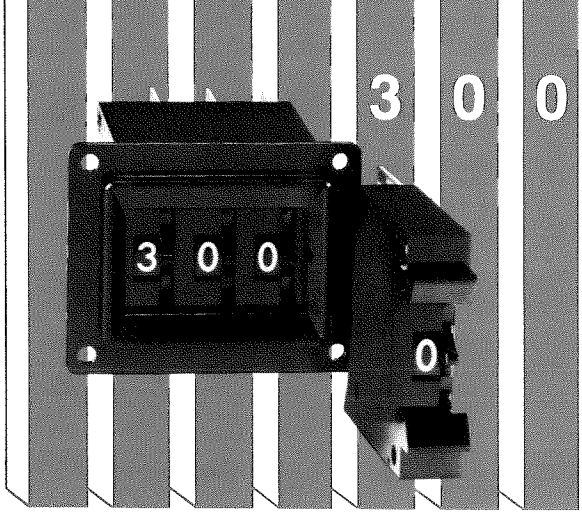
NOTES:

1. Drawing tolerances: .X = ±.8(.03), .XX = ±.25(.010).
2. For termination details, see drawing of specific module. See truth table for output circuit details.
3. Add 6.35(.250) to dimensions A, B, C, D and E for each spacer used in assembly.
4. Four No. 2-56 x 3/8" screws with nuts and lockwashers furnished with each assembly of one or more modules with end brackets and assembly studs.
5. Prime dimensions are metric.

WINDOW AND CHARACTER DIMENSIONS

Positions	Window Dimensions H	Window Dimensions W	Max. character Height	Visual Comparison
8	5.79 (.228)	4.06 (.160)	4.32 (.170)	3
10	5.79 (.228)	4.06 (.160)	4.32 (.170)	3
12	5.79 (.228)	4.06 (.160)	3.63 (.143)	3
16	4.06 (.160)	4.06 (.160)	3.04 (.120)	3

Character heights cannot be increased from those shown. For maximum usable window width, consult factory.



300 Series Digiswitch®

QPL approved to MIL-S-22710/11
8, 10, 12 or 16 standard dial positions
Rear mounted
Switch O.D. size 12.7 (.500) wide x 47.75 (1.88) high
Distributor or factory direct
When ordering qualified switches in accordance to MIL-S-22710 you must state requirement on your order for proper processing by the factory.

DESCRIPTION

This Series 300 meets or exceeds the industry standard in applications that allow the convenience of large switches and call for all but the most rigid environmental requirements. The Digiswitch® offers more available options, output codes and special termination features than any other thumbwheel.

FEATURES

- QPL approved to MIL-S-22710/11
- *Special dial characters
- Factory installed dial stops
- 6.35 (.250) and 12.7 (.500) spacers with *optional markings and lighted decimal point
- *Lighted decimal point on case
- RFI shielding
- *Message units 25.4 (1.0) or 44.45 (1.75)
- *Double module 19.05 (.75) or 25.4 (1.00)
- Replaceable lighting
- *Provisions for mounting components
- *Special switch modules for Digividers™ and Digidecades™
- Field assembly or factory assembled to customer specifications

*See switch parameters section or consult factory.

SPECIFICATIONS

MECHANICAL

Operating force: 7 to 10 ounces.

Life: Over 1,000,000 detent operations at rated temperature and electrical load.

Standard color and finish: Gloss black case, brackets, wheel and dial, with white dial characters.

Weight: .75 ounces per module (approximately).

ELECTRICAL:

Rated electrical loads: 28V AC or 28V DC at 125 milliamps per MIL-S-22710. Non-switching load 3 amp max.

Contact resistance: 100 milliohms initial.

Insulation resistance: 1000 megohms.

Dielectric strength: 1000 VRMS.

ENVIRONMENTAL:

Operating temperature: −65°C to +71°C, 5V, lighted, −65°C to +65°C 28V and —65 °C to + 85 °C, unlighted.

Shock: 100 G's per MIL-STD-202, Method 213, Test Condition I.

Vibration: 15 G's per MIL-STD-202, Method 204, Test Condition B.

MATERIALS:

Plastic parts: Thermoplastic (polycarbonate, nylon or teflon).

Printed circuit board: Laminate per MIL-P-13949, Type GF, plated with nickel per Fed. Spec. QQ-N-290, Class 2 and gold plated per MIL-G-45204, Type II.

Contacts: Precious metal alloy.

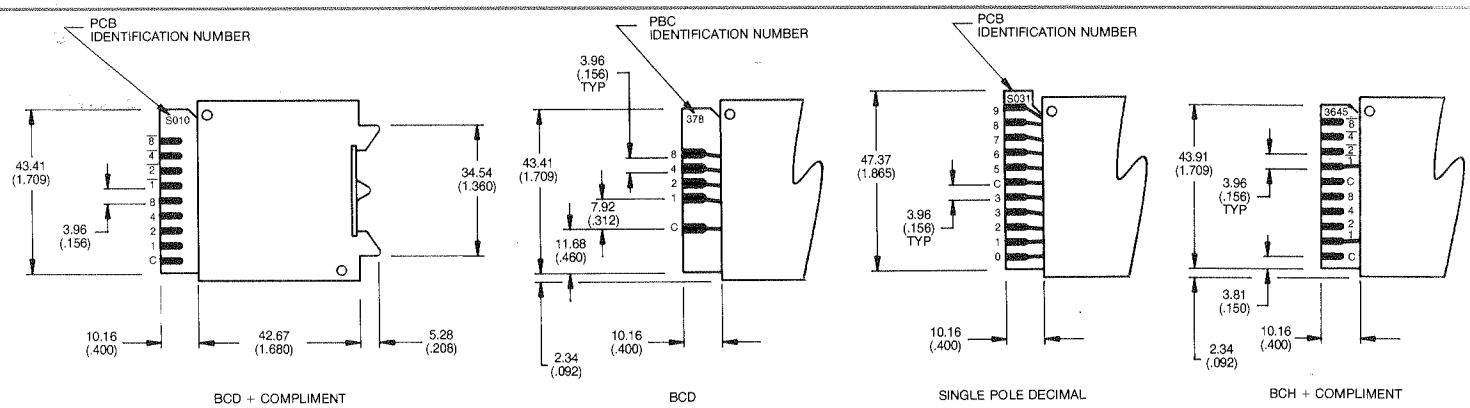
Hardware: Corrosion protected or corrosion resistant steel.

IMPORTANT NOTICE:

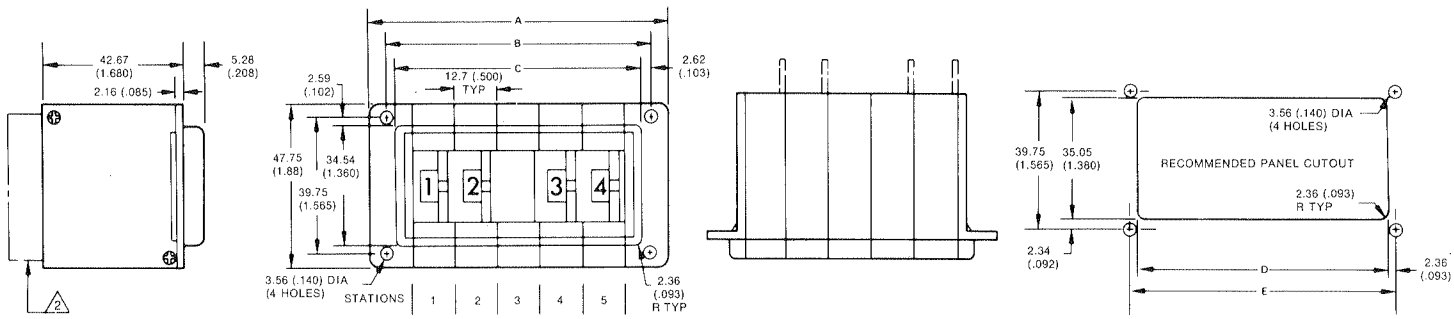
Do not allow flux or cleaning agent to enter switch. Use only 40% isopropyl alcohol in distilled water for cleaning agents. For additional information about recommended cleaning methods, contact Digitran.

TRUTH TABLE CODES SERIES 300

Code	Series	Truth Tables / Positions	001 2	002 8	003 8	004 8	006 8	007 8	008 10	011 10	013 10	014 10	016 10	017 10	021 10	022 10	023 10	024 10	025 10	038 10	039 10	041 12	043 12	047 16	048 16	049 16	050 16
• 03	= 300		•	•	•	•	•	•	•	•	•	•	•	•	•	—	•	•	•	•	•	•	•	•	•	•	•
PC Terminations per Truth Table Code			S P W C L	S — — C L	S — — — —	S P W C L	S P W C L	S — — C —	S P W C —	S P W C —	S P W C L	S — — C L	S P W C L	S P W C —	S P W C L	— — — — —	S — — C —	S — — C L	— — — — L	S — — — —	S — — — —	S P W C —	S P W — —	S — — — —	S P W C L	S P W C L	S — — C —



TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 300 DIGISWITCH®



How to order standard switch modules

See page 79 for Assembly Ordering Instructions
All spaces must be filled for a complete part (switch) number

Example: 03/011/P/NS/S/G/E

Series
03 = 300

Truth Table Code
See Truth Table codes for 8, 10, 12 & 16 positions.

PC Terminations
S = Direct solder (Standard)
P = Pin terminals
W = Wire wrap
C = Connector compatible/ connector not furnished
L = Direct solder with diode provisions
M = Solder pins with diode provisions
N = Wire wrap with diode provisions

Stops ***
NS = No stops.
For stops show first and last position.
(i.e.: 3 7 dial will now read 3 through 7)

Lighting *

COLOR	LAMP VOLTAGE
O = No Lighting	
E = Clear	5
G = Clear	28
H = Red	5
K = Red	28
Z = Lighting provisions no lamp.	

Color **
F = Matte black case, satin black dial, white characters.
G = All gloss black, white characters

Dial Options
S = Standard dial characters.
A = 0-9, A-F (16 position only)
B = −, + repeating
C = 0, 5 repeating

Not all options are available in all series or codes. Some tooling charges may be required.

*When ordering a lighted switch, top lighting is standard. For other positions consult factory.

**For nonstandard colors and combinations consult factory.

***For stops on 12 or 16 position switches see modified standard ordering instructions, page 78, or consult factory.

Notes 1 — For nonstandard switch options and features not covered in the how to order chart, see modified ordering instruction section, page 78, or consult factory.

RECOMMENDED ASSEMBLY PANEL CUTOUT DIMENSIONS

Number of 12.7 (.5") Stations	A	B	C	D 4.	E 4.
1	35.8(1.41)	27.2(1.07)	22.1(.87)	22.6(.89)	27.2(1.07)
2	48.5(1.91)	39.9(1.57)	34.8(1.37)	35.3(1.39)	39.9(1.57)
3	61.2(2.41)	52.6(2.07)	47.5(1.87)	48.0(1.89)	52.6(2.07)
4	73.9(2.91)	65.3(2.57)	60.2(2.37)	60.7(2.39)	65.3(2.57)
5	86.6(3.41)	78.0(3.07)	72.9(2.87)	73.4(2.89)	78.0(3.07)
6	99.3(3.91)	90.7(3.57)	85.6(3.37)	86.1(3.39)	90.7(3.57)
7	112.0(4.41)	103.4(4.07)	98.3(3.87)	98.8(3.89)	103.4(4.07)
8	124.7(4.91)	116.1(4.57)	111.0(4.37)	111.5(4.39)	116.1(4.57)
9	137.4(5.41)	128.8(5.07)	123.7(4.87)	124.2(4.89)	128.8(5.07)
10	150.1(5.91)	141.5(5.57)	136.4(5.37)	136.9(5.39)	141.5(5.57)

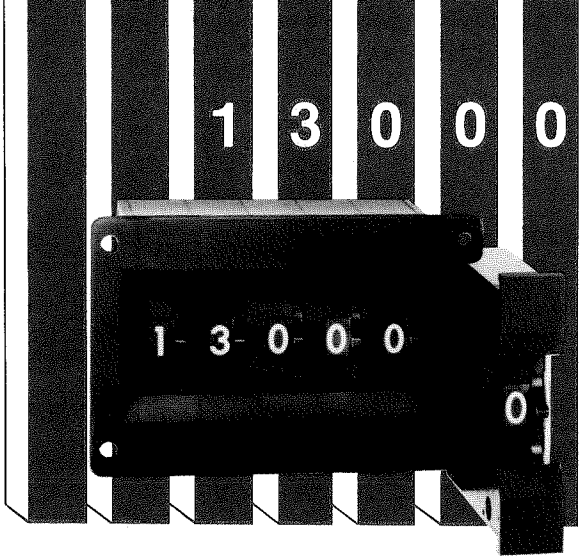
NOTES:

1. Drawing tolerances: .X = ±.8 (.03), .XX = ±.25 (.010).
2. For termination details, see drawing of specific module. See truth table for output circuit details. Add 6.35 (.250) to 12:7 (.500) to dimensions A, B, C, D, & E when using respective size spacers.
3. Four No. 4-40 × 7/16" screws with nuts and lockwashers furnished with each assembly of one or more modules with end brackets and assembly studs.
4. Tolerance of D and E dimensions is ±.25 (.010).
5. Prime dimensions are metric.

WINDOW AND CHARACTER DIMENSIONS

	Window Dimensions		Max. character	Visual
Positions	H	W	Height	Comparison
8	9.52 (.375)	5.58 (.220)	5.95 (.235)	3
10	9.52 (.375)	5.58 (.220)	5.96 (.235)	3
12	9.52 (.375)	5.58 (.220)	5.79 (.228)	3
16	5.97 (.235)	5.58 (.220)	4.06 (.160)	3

Character heights cannot be increased from those shown. For maximum usable window width, consult factory.



13000 Series Digiswitch®

QPL approved to MIL-S-22710/14
Front mounted
8, 10, 12 or 16 standard dial positions
Switch O.D. size 12.7 (.500) wide x 53.98 (2.125) high
Distributor or factory direct
When ordering qualified switches in accordance to MIL-S-22710 you must state this requirement on your order for proper processing by the factory.

DESCRIPTION

The Series 13000 is essentially the same as the Series 300 except for mounting and there is no replaceable lighting on the 13000. Designed for applications that permit the convenience of large switch design and all but the most rigid environmental requirements. The Digiswitch® offers more available options, output codes and special termination features than any other thumbwheels.

FEATURES

- QPL approved to MIL-S-22710/14
- *Special dial characters
- Factory installed dial stops
- 6.35 (.250) and 12.7 (.500) spacers
- *Optional markings on switch case and spacers
- *RFI shielding
- *25.4 (1.0) message units
- *Double modules
- *Provisions for mounting components
- Field assembly or factory assembled to customer specifications

*See switch parameters for details or consult factory.

SPECIFICATIONS

MECHANICAL

Operating force: 7 to 10 ounces.

Life: Over 1,000,000 detent operations at rated temperature and electrical load.

Dial character height: 0.235" on 8, 10 or 12 position units, 0.160" on 16 position units. When ordering 16 position switches, 0.160" high characters may also be specified on 8, 10 or 12 position units used in the same assembly.

Standard color and finish: Matte black, brackets, wheel and dial, with white dial characters.

Weight: .75 ounces per module (approximately).

ELECTRICAL:

Rated electrical loads: 28V AC or 28V DC at 125 milliamps per MIL-S-22710. Non-switching load 3 amp max.

Contact resistance: 100 milliohms initial.

Insulation resistance: 1000 megohms.

Dielectric strength: 1000 VRMS.

ENVIRONMENTAL:

Operating temperature: —65 °C to + 85 °C.

Shock: 100 G's per MIL-STD-202, Method 213, Test Condition I.

Vibration: 15 G's per MIL-STD-202, Method 204, Test Condition B.

MATERIALS:

Plastic parts: Thermoplastic (polycarbonate, nylon or teflon).

Printed circuit board: Laminate per MIL-P-13949, Type GF, plated with nickel per Fed. Spec. QQ-N-290, Class 2 and gold plated per MIL-G-45204, Type II.

Contacts: Precious metal alloy.

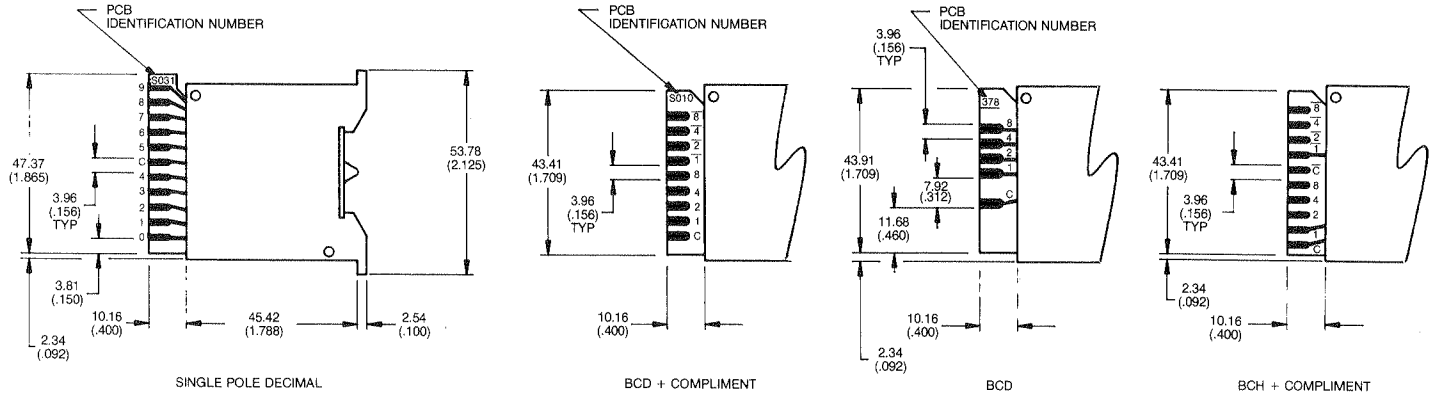
Hardware: Corrosion protected or corrosion resistant steel.

IMPORTANT NOTICE:

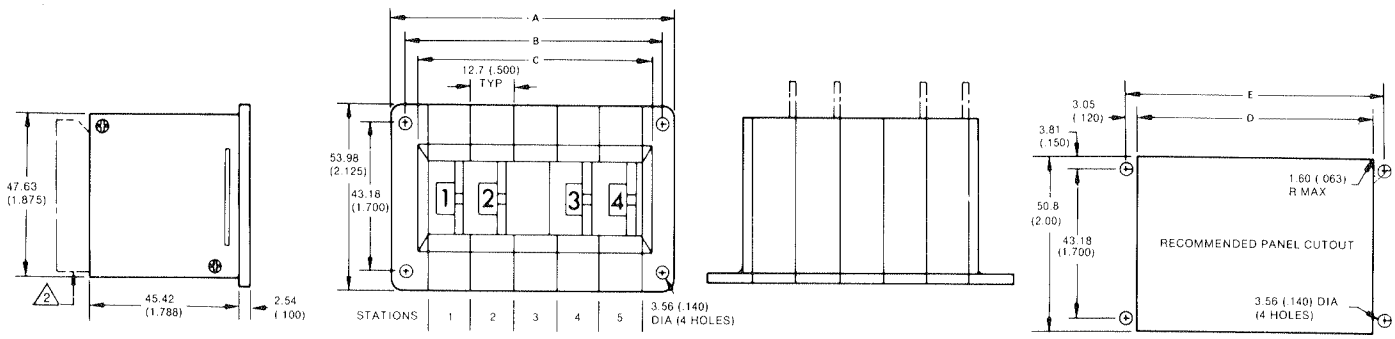
Do not allow flux or cleaning agent to enter switch. Use only 40% isopropyl alcohol in distilled water for cleaning agents. For additional information about recommended cleaning methods, contact Digitran.

TRUTH TABLE CODES SERIES 13000

Truth Tables / Positions	001 2	002 8	003 8	004 8	006 8	007 8	008 10	011 10	013 10	014 10	016 10	017 10	021 10	022 10	023 10	024 10	025 10	038 10	039 10	041 12	043 12	047 16	048 16	049 16	050 16
Code Series																									
• 13 = 13000	•	•	•	•	•	•	•	•	•	•	•	•	•	—	•	•	•	•	•	•	•	•	•	•	•
PC Terminations per Truth Table Code	S P W C L	S P W C —	S — — — —	S P W C —	S P W C L	S — — C —	S P W C —	S P W — —	S P W C L	S — — C L	S P W C L	S P W C —	S P W C L	— — — — —	S — — C —	S — — C L	— — — — L	S — — — —	S — — — —	S P W C —	S P W — —	S — — — —	S P W C —	S P W C L	S — — C —



TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 13000 DIGISWITCH®



How to order standard switch modules

See page 79 for Assembly Ordering Instructions

All spaces must be filled for a complete part (switch) number

Example: 13/014/S/08/S/F/O

Series
13 = 13000

Truth Table Code
See Truth Table codes for 8, 10, 12 or 16 positions.

PC Terminations
S = Direct solder (Standard)
P = Pin terminals
W = Wire wrap
C = Connector compatible/ connector not furnished
L = Direct solder with diode provisions
M = Solder pins with diode provisions
N = Wire wrap with diode provisions

Stops **
NS = No stops.
For stops show first and last position.
(i.e.: 3 9 dial will now read 3 through 9).

Lighting
O = No lighting available

Color*
F = Matte black case, satin black dial, white characters.

Dial Options
S = Standard dial characters
A = 0-9, A-F (16 position only)
B = −, + repeating
C = 0, 5 repeating

Not all options are available in all series or codes. Some tooling charges may be required.

*For nonstandard colors and combinations consult factory.

**For stops on 12 or 16 position switches see modified standard ordering instructions, page 78, or consult factory.

Notes 1 — For nonstandard switch options and features not covered in the how to order chart, see modified ordering instruction section, page 78, or consult factory.

RECOMMENDED ASSEMBLY PANEL CUTOUT DIMENSIONS

Number of 12.7 (.5") Stations	A	B	C	D 4.	E 4.
1	33.0(1.30)	24.9(.98)	17.8(.70)	18.8(.74)	24.9(.98)
2	45.7(1.80)	37.6(1.48)	30.5(1.20)	31.5(1.24)	37.6(1.48)
3	58.4(2.30)	50.3(1.98)	43.2(1.70)	44.2(1.74)	50.3(1.98)
4	71.1(2.80)	63.0(2.48)	55.9(2.20)	56.9(2.24)	63.0(2.48)
5	83.8(3.30)	75.7(2.98)	68.6(2.70)	69.6(2.74)	75.7(2.98)
6	96.5(3.80)	88.4(3.48)	81.3(3.20)	82.3(3.24)	88.4(3.48)
7	109.2(4.30)	101.1(3.98)	94.0(3.70)	95.0(3.74)	101.1(3.98)
8	121.9(4.80)	113.8(4.48)	106.7(4.20)	107.7(4.24)	113.8(4.48)
9	134.6(5.30)	126.5(4.98)	119.4(4.70)	120.4(4.74)	126.5(4.98)
10	147.3(5.80)	139.2(5.48)	132.1(5.20)	133.1(5.24)	139.2(5.48)

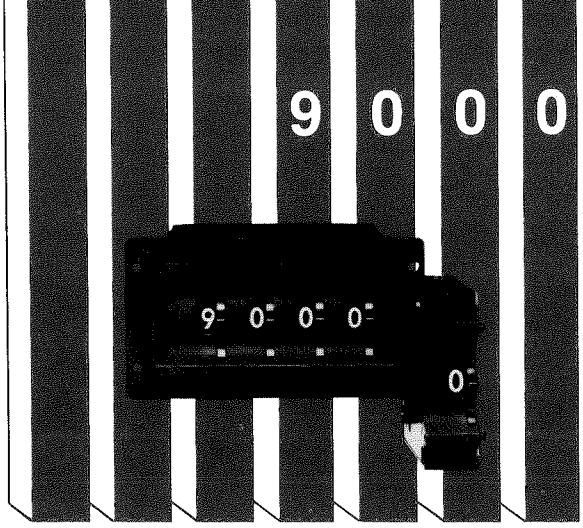
NOTES:

1. Drawing tolerances: .X = ±.8 (.03), .XX = ±.25 (.010).
2. For termination details, see drawing of specific module. See truth table for output circuit details. Add 6.35 (.250) to 12.7 (.500) to dimensions A, B, C, D, & E when using respective size spacers.
3. Four No. 4-40 × 7/16" screws with nuts and lockwashers furnished with each assembly of one or more modules with end brackets and assembly studs.
4. Tolerance of D and E dimensions is ±.25 (.010).
5. Prime dimensions are metric.

WINDOW AND CHARACTER DIMENSIONS

Positions	Window Dimensions H	Window Dimensions W	Max. character Height	Visual Comparison
8	9.53 (.375)	5.59 (.220)	5.97 (.235)	3
10	9.53 (.375)	5.59 (.220)	5.97 (.235)	3
12	8.51 (.335)	5.59 (.220)	5.79 (.228)	3
16	5.97 (.235)	5.59 (.220)	4.06 (.160)	3

Character heights cannot be increased from those shown. For maximum usable window width, consult factory.



Series Digiswitch®

Series 9000 is QPL approved to MIL-S-22710/12
8, 10, 12 or 16 standard dial positions
Rear mounted
Switch O.D. size 15.24 (.600) wide x 48.77 (1.92) high
Representatives or factory direct

When ordering qualified switches in accordance to MIL-S-22710 you must state this requirement on your order for proper processing by the factory.

DESCRIPTION

The Series 9000 Digiswitch® offers more options, output codes and special termination features than any other sealed switches in their size ranges.

FEATURES

- Series 9000 is QPL approved to MIL-S-22710/12
- *Special dial characters
- Factory installed dial stops
- *5.08 (.200) and 10.16 (.400) spacers with or without markings and lighted decimal point.
- Replaceable lighting
- *RFI shielding
- *19.05 (.750) or 25.4 (1.0) message units
- Special switch modules for Digividers™ and Digidecades™
- *Provisions for mounting components
- Field assembly or factory assembled to customer specifications

*See switch parameters section for details or consult factory.

SPECIFICATIONS

MECHANICAL

Operating force: 7 to 10 ounces.

Life: Over 1,000,000 detent operations.

Weight: 1 ounce (approximately).

Standard color and finish: Non-glare, matte black case and end brackets. Satin black wheel and dial with white dial characters.

ELECTRICAL:

Rated electrical loads: 28V AC or 28V DC at 125 milliamps per specification MIL-S-22710. Non-switching 3 amps maximum.

Contact resistance: 100 milliohms maximum initial.

Insulation resistance: 1000 megohms.

Dielectric strength: 1000 VRMS.

ENVIRONMENTAL:

Shock: 100 G's per MIL-STD-202, Method 213, Test Condition I.

Vibration: 15 G's at 70-2000Hz; .06" double amplitude at 10-70Hz. (Ref.: MIL-STD-202, Method 204, Test Condition B.)

Operating temperature: −65°C to +85°C, unlighted, −65°C to +71°C, 5V, −65°C to +65°C, 28V, lighted.

Moisture resistance: Per MIL-STD-202, Method 106.

Thermal shock: Per MIL-STD-202, Method 107, Test Condition A.

Salt spray: Per MIL-STD-202, Method 101, Test Condition B.

Explosion proof: Per MIL-STD-202, Method 109.

Sand and dust: Per MIL-STD-202, Method 110, Test Condition B.

MATERIALS:

Plastic parts: Thermoplastic (polycarbonate, nylon or teflon).

Printed circuit board: Laminate per MIL-P-13949, Type GF, plated with nickel per Fed. Spec. QQ-N-290, Class 2, and gold plated per MIL-G-45204, Type II, Class I.

Contacts: Precious metal alloy.

Brush base and detent spring: Beryllium copper.

Hardware: Corrosion protected or corrosion resistant steel.

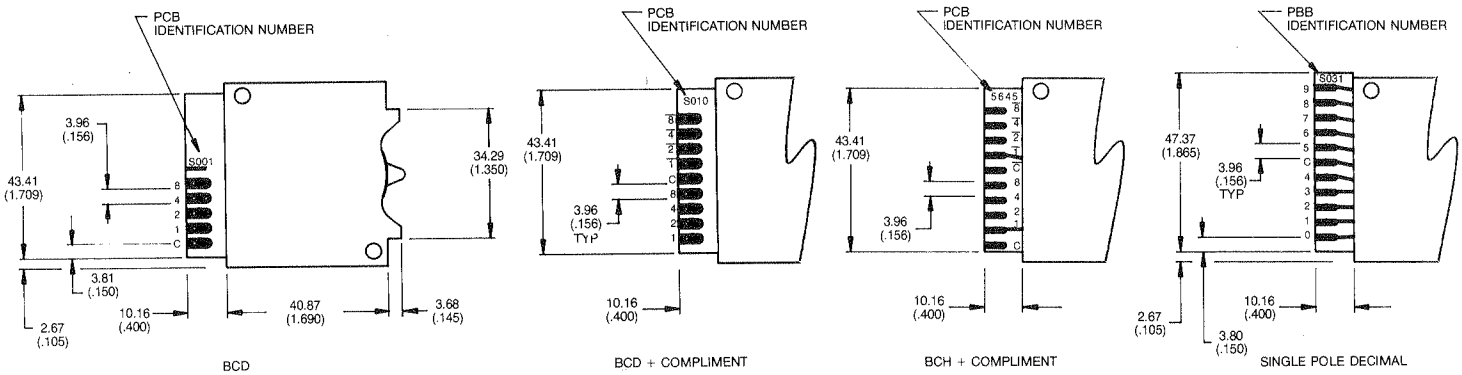
IMPORTANT NOTICE:

Do not allow flux or cleaning agent to enter switch. Use only 40% isopropyl alcohol in distilled water for cleaning agents. For additional information about recommended cleaning methods, contact Digitran.

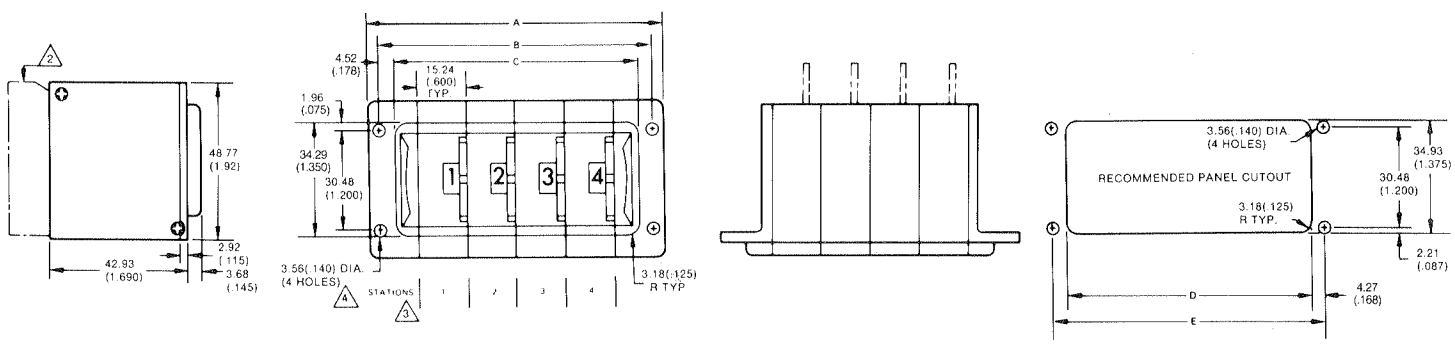
TRUTH TABLE CODES SERIES 9000

Truth Tables	001	002	003	004	006	007	008	011	013	014	016	017	021	022	023	024	025	038	039	041	043	047	048	049	050
Positions	2	8	8	8	8	8	10	10	10	10	10	10	10	10	10	10	10	10	10	12	12	16	16	16	16
Code Series																									
• 09 = 9000	•	•	•	•	•	•	•	•	•	•	•	•	•	**	•	•	•	•	•	•	•	•	•	•	•
PC Terminations per Truth Table Code	S P W C L	S P W C —	S — — — —	S P W C L	S P W C L	S — — C —	S P W C —	S — — C —	S P W C L	S — — C L	S P W C L	S P W C —	S P W C L	— — — — —	S — — C —	S — — C L	— — — — L	S — — — —	S — — — —	S P W C —	S P W — —	S — — — —	S P W C —	S P W C L	S — — C —

**Printed circuit board code is BCD plus complement. Available with components



TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 9000 DIGISWITCH®



How to order standard switch modules

See page 79 for Assembly Ordering Instructions

All spaces must be filled for a complete part (switch) number

Example: 09/004/S/06/S/F/E

Series
09 = 9000

Truth Table Code
See Truth Table code for 8, 10, 12 or 16 positions.

PC Terminations
S = Direct solder (Standard)
P = Pin terminals
W = Wire wrap
C = Connector compatible/ connector not furnished
L = Direct solder with diode provisions
M = Solder pins with diode provisions
N = Wire wrap with diode provisions

Stops ***
NS = No stops
For stops show first and last usable position.
(i.e. 3 9 dial wiill now read 3 through 9)

Lighting*

COLOR		LAMP VOLTAGE
O =	No Lighting	
E =	Clear	5
G =	Clear	28
H =	Red	5
K =	Red	28
Z =	Lighting provisions red filter no lamp	
Y =	Lighting provisions clear filter no lamp	

Color**
F = Matte black case, satin black dial, white characters.

Dial Options
S = Standard dial characters
A = 0-9, A-F (16 position only)
B = −, + repeating
C = 0, 5 repeating

Not all options are available in all series or codes. Some tooling charges may be required.

*When ordering a lighted switch in this series top lighting is standard. For other positions consult factory.

**For nonstandard colors and combinations consult factory.

***For stops on 12 or 16 position switches see modified standard ordering instructions, page 78, or consult factory.

Notes 1 — For nonstandard switch options and features not covered in the how to order chart, see modified ordering instruction section, page 78, or consult factory.

RECOMMENDED ASSEMBLY PANEL CUTOUT DIMENSIONS

NUMBER OF 15.2(.6") STATIONS	A	B	C	D	E
1	45.7(1.80)	39.0(1.54)	30.0(1.18)	30.5(1.20)	39.0(1.54)
2	61.0(2.40)	54.2(2.14)	45.2(1.78)	45.7(1.80)	54.2(2.14)
3	76.2(3.00)	69.5(2.74)	60.5(2.38)	61.0(2.40)	69.5(2.74)
4	91.4(3.60)	84.7(3.34)	75.7(2.98)	76.2(3.00)	84.7(3.34)
5	106.7(4.20)	99.9(3.94)	91.0(3.58)	91.4(3.60)	99.9(3.94)
6	121.9(4.80)	115.2(4.54)	106.2(4.18)	106.7(4.20)	115.2(4.54)
7	137.2(5.40)	130.4(5.14)	121.4(4.78)	122.0(4.80)	130.4(5.14)
8	152.4(6.00)	145.7(5.74)	136.7(5.38)	137.2(5.40)	145.7(5.74)
9	167.6(6.60)	160.9(6.34)	151.9(5.98)	152.4(6.00)	160.9(6.34)
10	182.9(7.20)	176.2(6.94)	167.1(6.58)	167.6(6.60)	176.2(6.94)

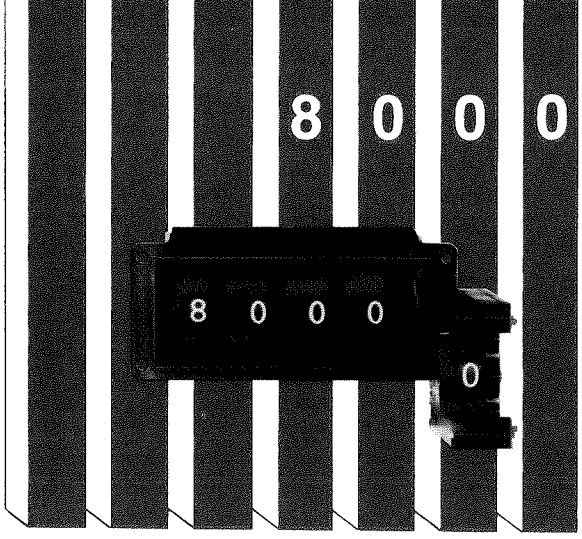
Notes:

1. Drawing tolerances: .XX = ±.8(.03), .XXX = ±.25(.010).
2. For termination details, see drawing of specific module. See truth table for output circuit details.
3. Add 10.16(.400) to dimensions A, B, C, D and E for each spacer or double module used in an assembly.
4. Four No. 4-40 x 7/16" screws with nuts and lockwashers furnished with each assembly of one or more modules with end brackets and assembly studs.
5. Prime dimensions are metric.

WINDOW AND CHARACTER DIMENSIONS

	Window Dimensions		Max. character	Visual
Positions	H	W	Height	Comparison
8	9.52 (.375)	5.59 (.220)	5.97 (.235)	3
10	9.52 (.375)	5.59 (.220)	5.97 (.235)	3
12	9.52 (.375)	5.59 (.220)	5.79 (.228)	3
16	5.97 (.235)	5.59 (.220)	4.06 (.160)	3

Character heights cannot be increased from those shown. For maximum usable window width, consult factory.



Series Miniswitch®

8, 10 & 16 standard dial positions
Rear mounted
Designed to meet MIL-S-22710
Switch O.D. Size 12.7 (.500) wide x 29.21 (1.15) high
Distributor or factory direct

DESCRIPTION

The Series 8000 Miniswitch® was designed for instruments or systems where packaging and panel limitations are of paramount importance. Large legible white characters against a black background provide inline readability at most viewing angles. The Miniswitch® offers an almost unlimited choice of codes, terminations and connection options.

FEATURES

- *Special dial characters
- Field installable dial stops (except 16 position)
- Two standard spacers 6.35 (.250) and 12.7 (.500)
- *Special markings for case and spacers
- *Lighted decimals on case or spacers
- Replaceable top lighting
- *Message units
- *Provisions for mounting components
- Special switch modules for Digividers™ and Digidecades.™
- Field or factory assembled to customer specifications

*See switch parameters section for details or consult factory.

SPECIFICATIONS

MECHANICAL

Operating force: 6 to 14 ounces

Life: Over 1,000,000 detent operations.

Dial character height: .200" (8 and 10 position), .120" (16 position).

Standard color and finish: Non-glare, matte black case and end brackets. Satin black wheel and dial with white dial characters.

Weight: ⅓ ounce per module (approximately).

ELECTRICAL:

Rated electrical loads: 28V AC or 28V DC at 125 milliamps. Non-switching 3 amps maximum.

Contact resistance: 100 milliohms initial.

Insulation resistance: 1000 megohms.

Dielectric strength: 750 VRMS.

ENVIRONMENTAL:

Shock: 100 G's per MIL-STD-202, Method 213, Test Condition I.

Vibration: 15 G's per MIL-STD-202, Method 204, Test Condition B.

Operating temperature: —65 °C to +85 °C unlighted. —65 °C to +71 °C for 5V lighting, —65 °C to +65 °C for 28V lighting.

MATERIALS:

Plastic parts: Thermoplastic (polycarbonate, nylon or teflon).

Printed circuit board: Laminate per MIL-P-13949, Type GF, plated with nickel per Fed. Spec. QQ-N-290, Class 2 and gold plated per MIL-G-45204, Type II, Class 0.

Contacts: Precious metal alloy.

Hardware: Corrosion protected or corrosion resistant steel.

Detent spring: Corrosion resistant steel.

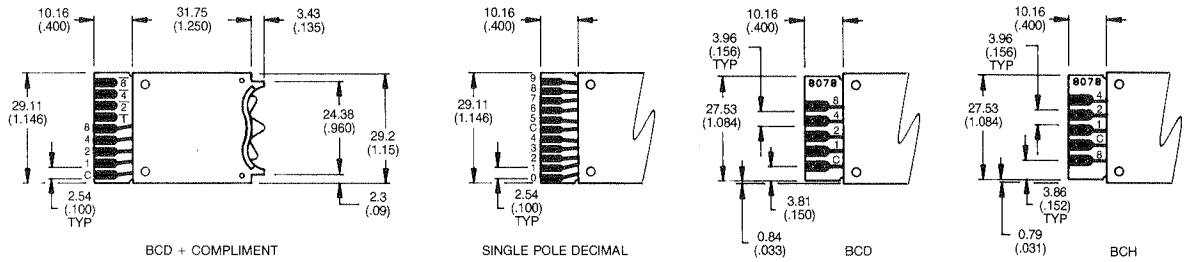
IMPORTANT NOTICE:

Do not allow flux or cleaning agent to enter switch. Use only 40% isopropyl alcohol in distilled water for cleaning agents. For additional information about recommended cleaning methods, contact Digitran.

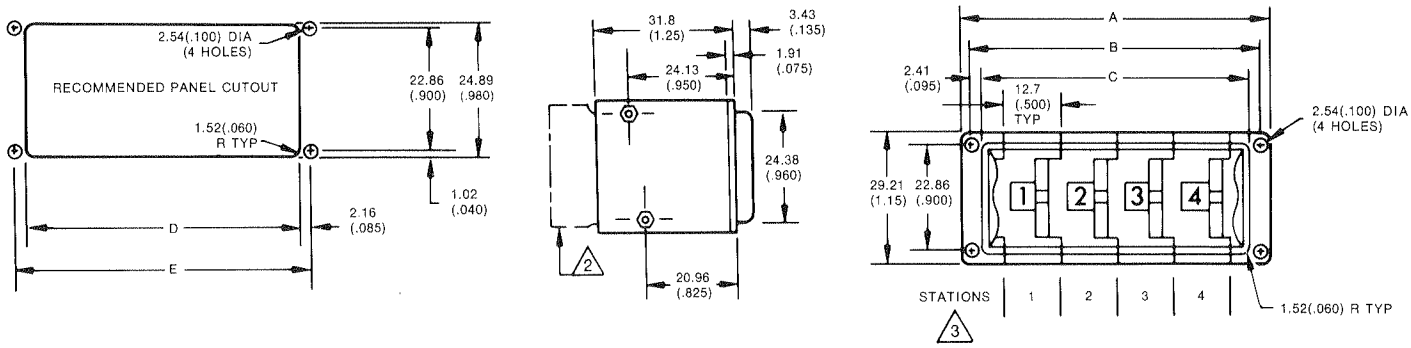
TRUTH TABLE CODES SERIES 8000

Truth Tables	001	002	003	004	006	007	008	011	013	014	016	017	021	022	023	024	025	038	039	041	043	047	048	049	050
Positions	2	8	8	8	8	8	10	10	10	10	10	10	10	10	10	10	10	10	10	12	12	16	16	16	16
Code Series																									
• 08 = 8000	•	•	*	•	•	•	•	•	•	•	•	•	—	•	—	—	•	•	•	—	—	•	•	—	•
PC Terminations per Truth Table Code	S P W C L	S P W — —	S — — — —	S P W C L	S P W — L	S — — C L	S P W C —	S — — — —	S P W C L	S P W C L	S P W C —	S P W C L	— — — — —	S — C — —	— — — — —	— — — — —	S — C — L	S — — — —	S — — — —	— — — — —	— — — — —	S P W — —	S P W C L	— — — — —	S P W — —

*Octal code achieved by dial stops.



TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 8000 MINISWITCH®



How to order standard switch modules

See page 79 for Assembly Ordering Instructions

All spaces must be filled for a complete part (switch) number

Example: 08/038/S/NS/B/F/Y

Series
08 = 8000

Truth Table Code
See Truth Tables for 8, 10 & 16 positions.

PC Terminations
S = Direct solder (Standard)
P = Pin terminals
W = Wire wrap
C = Connector compatible/ connector not furnished
L = Direct solder with diode provisions
M = Solder pins with diode provisions
N = Wire wrap with diode provisions

Stops***
NS = No stops
Stops = Show first and last usable positions.
(i.e.: 3 9 dial will now read 3 through 9)

Lighting*

COLOR	LAMP VOLTAGE
O = No Lighting	
E = Clear	5
G = Clear	28
H = Red	5
K = Red	28

Z = Lighting provisions red filter no lamp
Y = Lighting provisions clear filter no lamp.

Color**
F = Matte black case, satin black dial, white characters.

Dial options
S = Standard dial characters
A = 0-9, A-F (16 position only)
B = −, + repeating
C = 0, 5 repeating

Not all options are available in all series or codes. Some tooling charges may be required.

*When ordering a lighted switch in this series top lighting is standard. For other positions consult factory.

**For nonstandard colors and combinations consult factory.

***For stops on 12 or 16 position switches see modified standard ordering instructions, page 78, or consult factory.

Notes 1 — For nonstandard switch options and features not covered in the how to order chart, see modified ordering instruction section, page 78, or consult factory.

RECOMMENDED ASSEMBLY PANEL CUTOUT DIMENSIONS

NUMBER OF 12.7(.5") STATIONS	A 4.	B	C 4.	D 4.	E
1	32.0(1.26)	27.7(1.09)	23.0(0.90)	23.4(0.92)	27.7(1.09)
2	44.7(1.76)	40.4(1.59)	35.6(1.40)	36.1(1.42)	40.4(1.59)
3	57.4(2.26)	53.1(2.09)	48.3(1.90)	48.8(1.92)	53.1(2.09)
4	70.1(2.76)	65.8(2.59)	61.0(2.40)	61.5(2.42)	65.8(2.59)
5	82.8(3.26)	78.5(3.09)	73.7(2.90)	74.2(2.92)	78.5(3.09)
6	95.5(3.76)	91.2(3.59)	86.4(3.40)	86.9(3.42)	91.2(3.59)
7	108.2(4.26)	103.9(4.09)	99.1(3.90)	99.6(3.92)	103.9(4.09)
8	121.0(4.76)	116.6(4.59)	112.0(4.40)	112.3(4.42)	116.6(4.59)
9	133.6(5.26)	129.3(5.09)	124.5(4.90)	125.0(4.92)	129.3(5.09)
10	146.3(5.76)	142.0(5.59)	137.2(5.40)	137.7(5.42)	142.0(5.59)

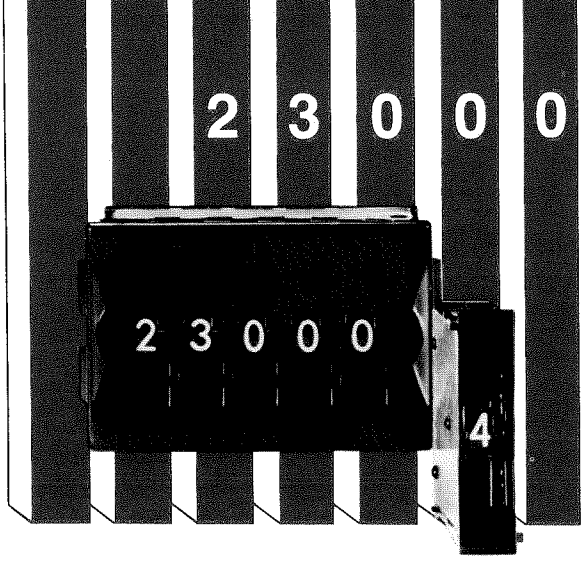
Notes:

1. Drawing tolerances: .X = ± .8 (.03), .XX = ± .25 (.01).
2. For termination details, see drawing of specific module. See truth table for output circuit details.
3. Add 6.35 (.250) or 12.7 (.500) respectively to dimensions A, B, C, D and E for each spacer used in an assembly.
4. Reduce by .15 (.006) for satin finish switches.
5. Prime dimensions are metric.

WINDOW AND CHARACTER DIMENSIONS

Positions	Window Dimensions H	Window Dimensions W	Max. character Height	Visual Comparisons
8	5.79 (.228)	5.84 (.230)	5.08 (200)	3
10	5.79 (.228)	5.84 (.230)	5.08 (.200)	3
16	3.71 (.146)	5.84 (.230)	3.05 (.120)	3

Character heights cannot be increased from those shown. For maximum usable window width, consult factory.



Series Snap-In Slimswitch®

10 standard dial positions
Front mounted
Switch O.D. size 8.00 (.315) wide x 33.00 (1.300) High
Distributor or factory direct

DESCRIPTION

Our Series 23000 Slimswitch,® were specially engineered for applications where economy is one of the primary considerations in selecting a control component. Ideal for maximum panel density, reliability, error proof setting action with easily read characters of 4.31 (.170) in height. The specially designed snap-in mounting feature saves on installation and replacement time and cost without the use of any tools

FEATURES

- Snap-in front mounting. Recommended panel thickness minimum 1.58 (.062) maximum 4. (.158)
- *Special dial characters
- Field installable dial stops
- 8.00 (.315) spacer
- *Lighted decimal on spacer
- Self-locking snap-on assembly straps
- *Provisions for mounting components
- Special switch modules for Digividers™ and Digidecades™
- Field or factory assembled to customer specifications

*See switch parameters for details or consult factory

SPECIFICATIONS

MECHANICAL

Operating force: 4 to 8 ounces.
Life: Over 1,000,000 detent operations at 25 °C (77 °F).
Weight: .25 ounce per module (approximately).
Dial character height: .170" for standard dials.

Standard finish and color: Case, wheel and end brackets, glossy black. Dial markings, white on black hot-stamped per detail specifications.

ELECTRICAL:

Rated electrical loads: 28V AC or 28V DC at 50 milliamps resistive at 25 °C (77 °F). Non-switching current: 2 amps.
Contact resistance: Less than 100 milliohms original value between common and output terminal(s).
Insulation resistance: 1000 megohms minimum per MIL-STD-202, Method 302, Test Condition A between any two non-connected terminals.
Dielectric strength: 500 VRMS.
Terminations: Solder (Specials upon request).

ENVIRONMENTAL:

Storage temperature: −40°C to +71°C.
Operating temperature: −20°C to +70°C.
Shock: 100 G's, 6 milliseconds duration, sawtooth.
Vibration: 5 G's at 70-2000Hz; .06" double amplitude, at 10-70Hz. (Ref: MIL-STD-202, Method 204, Test Condition B.)

MATERIALS:

Printed circuit board: Epoxy fiberglass.
Contacts: Precious metal alloy.
Structural parts: ABS thermoplastic.

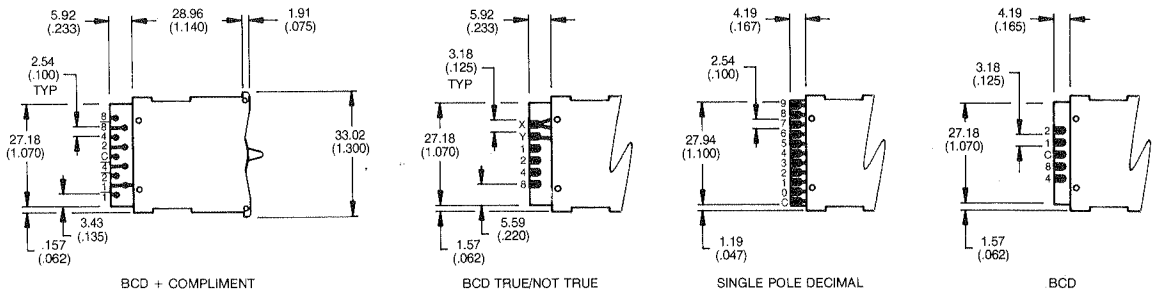
IMPORTANT NOTICE:

Do not allow flux or cleaning agent to enter switch. Use only 40% isopropyl alcohol in distilled water for cleaning agents. For additional information about recommended cleaning methods, contact Digitran.

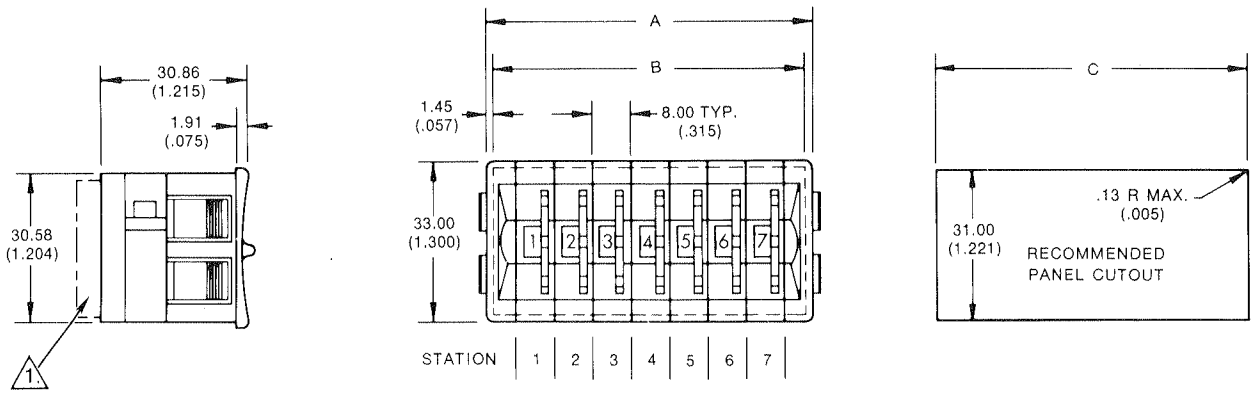
TRUTH TABLE CODES SERIES 23000

Truth Tables / Positions	001 2	002 8	003 8	004 8	006 8	007 8	008 10	011 10	013 10	014 10	016 10	017 10	021 10	022 10	023 10	024 10	025 10	038 10	039 10	041 12	043 12	047 16	048 16	049 16	050 16
Code Series																									
• 23 = 23000	•	*	*	*	—	*	•	•	•	•	•	•	—	•	—	—	•	•	•	—	—	—	—	—	—
PC Terminations per Truth Table Code	S — L	S P W L	S — —	S P W L	— — —	S P W —	S P W L	— — —	S — L	S P W L	S — —	S P W —	— — —	S P W L	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —

*Octal code achieved by dial stops.



TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 23000 SNAP-IN SLIMSWITCH®



How to order standard switch modules
See page 79 for Assembly Ordering Instructions
All spaces must be filled for a complete part (switch) number
Example: 23/011/S/NS/S/G/0

Series
23 = 23000

Truth Table Code
See Truth Table codes for 8 & 10 positions.

PC Terminations
S=Direct solder (Standard)
P=Pin terminals
W=Wire wrap
L =Direct solder with diode provisions
M=Solder pins with diode provisions
N =Wire wrap with diode provisions

Stops
NS = No stops.
For stops show first and last position.
(i.e.: 3 9 dial will now read 3 through 9)

Dial Options
S = Standard dial characters
B = −, + repeating
C = 0, 5 repeating

Color*
F = Matte black case, satin black dial, white characters.
G=All gloss black, white characters

Lighting
O=No lighting Available

RECOMMENDED ASSEMBLY PANEL CUTOUT DIMENSIONS

NUMBER OF MODULES	A	B	C
1	19.0 (.748)	16.0 (.630)	16.6 (.654)
2	27.0 (1.063)	24.0 (.945)	24.6 (.969)
3	35.0 (1.378)	32.0 (1.260)	32.6 (1.283)
4	43.0 (1.693)	40.0 (1.575)	40.6 (1.598)
5	51.0 (2.008)	48.0 (1.890)	48.6 (1.913)
6	59.0 (2.323)	56.0 (2.205)	56.6 (2.228)
7	67.0 (2.638)	64.0 (2.520)	64.6 (2.543)
8	75.0 (2.953)	72.0 (2.835)	72.6 (2.858)
9	83.0 (3.268)	80.0 (3.150)	80.6 (3.173)
10	91.0 (3.583)	88.0 (3.465)	88.6 (3.488)

NOTES:
1. For details of printed circuit board, terminals and electrical output, see drawing of specific module.
Prime dimensions are metric.

Not all options are available in all series or codes.
Some tooling charges may be required.

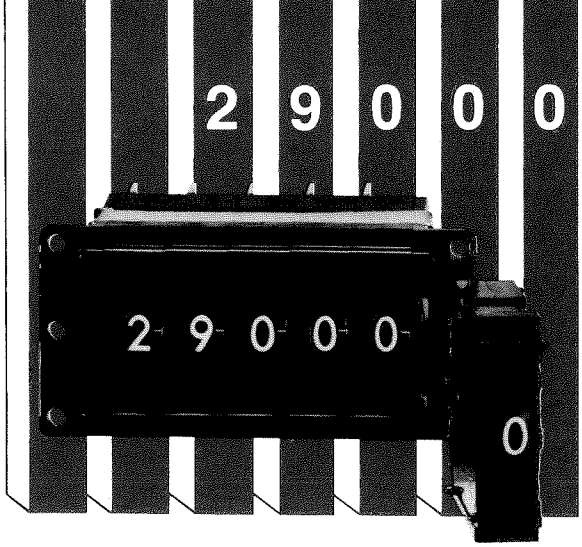
*For nonstandard colors and combinations consult factory.

Notes 1 — For nonstandard switch options and features not covered in the how to order chart, see modified ordering instruction section, page 78, or consult factory.

WINDOW AND CHARACTER DIMENSIONS

	Window Dimensions		Max. character	Visual
Positions	H	W	Height	Comparison
8	5.33 (.210)	3.45 (.136)	4.32 (.170)	3
10	5.33 (.210)	3.45 (.136)	4.32 (.170)	3

Character heights cannot be increased from those shown. For maximum usable window width, consult factory.



Series Miniswitch®

10, 12 or 16 standard dial positions
Rear mounted
Switch O.D. size 8.89 (.350) wide x 30.73 (1.21) high
Distributor or factory direct

DESCRIPTION

The Series 29000 Miniswitch® is economically priced and has been engineered with the same basic features of our higher priced thumbwheel switches. They are ideal for maximum panel density, reliability, error proof setting action with large easy to read character height. Assemblies are held together by Digitran's presized, stainless steel, self-locking assembly straps that eliminate the need of any assembly tools.

FEATURES

- *Special dial characters
- Field installable dial stops
- *Optional marking on spacers or switch case
- *Lighted decimal on spacer
- 8.89 (.350) spacer
- *26.67 (1.050) message units
- *Provisions for mounting components
- Dust protected switch chamber
- Special switch modules for Digivider™ and Digidecade™
- Field or factory assembled to customer specifications

*See switch parameters for details or consult factory.

SPECIFICATIONS

MECHANICAL

Operating force: 4 to 8 ounces.
Life: Over 1,000,000 detent operations at 25 °C (77 °F).

Standard color: Glossy black case and end brackets with white dial characters.

Special colors: Matte black, beige or solvent-resistant grey.

Weight: .25 ounce per module (approximately).

ELECTRICAL:

Rated electrical loads: 28 VAC or 28 VDC at 50 milliamps at 25 °C (77 °F). Non-switching load 2 amps maximum.
Contact resistance: 100 milliohms initial.
Insulation resistance: 1000 megohms.
Dielectric strength: 500 VRMS.

ENVIRONMENTAL:

Storage temperature: —40 °C to +71 °C.
Operating temperature: —20 °C to +70 °C.
Shock: 100 G's, 6 milliseconds duration, sawtooth.
Vibration: 15 G's at 70-2000Hz; .06" double amplitude at 10-70Hz.

MATERIALS:

Printed circuit board: Epoxy fiberglass.
Contacts: Precious metal alloy.
Structural parts: ABS thermoplastic.

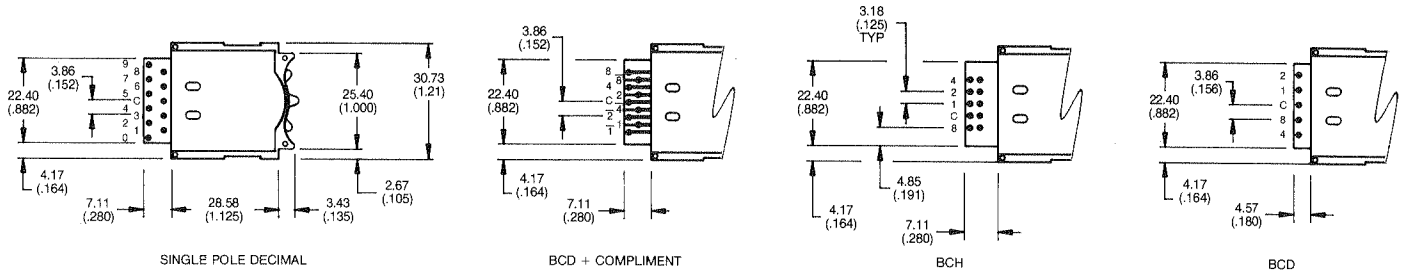
IMPORTANT NOTICE:

Do not allow flux or cleaning agent to enter switch. Use only 40% isopropyl alcohol in distilled water for cleaning agents. For additional information about recommended cleaning methods, contact Digitran.

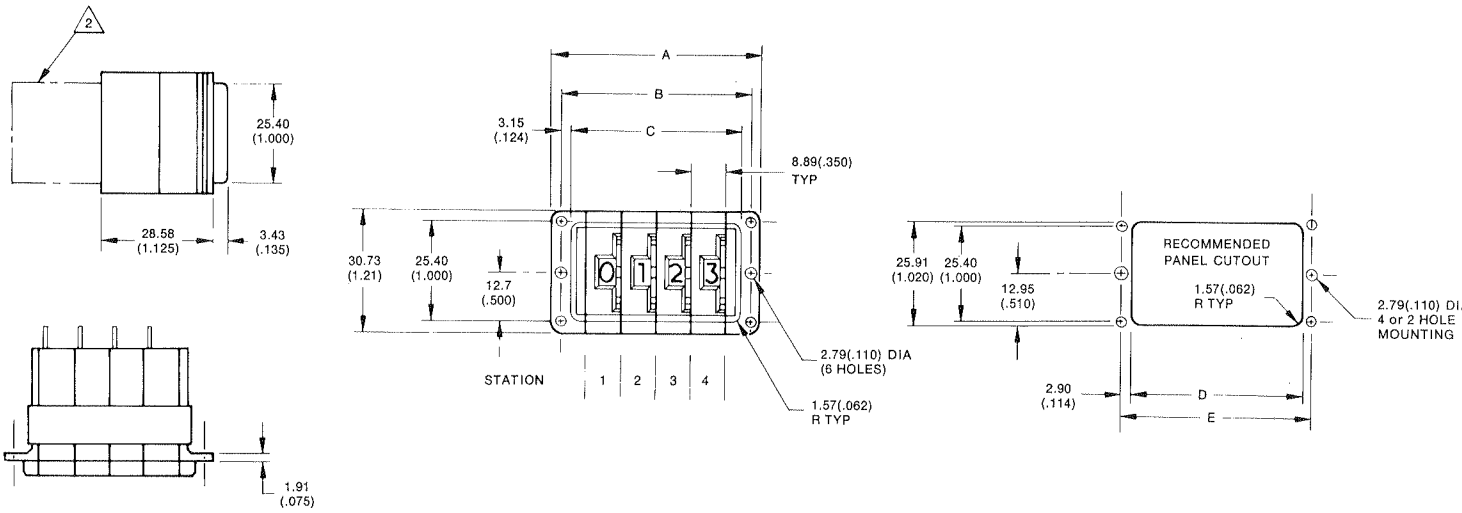
TRUTH TABLE CODES SERIES 29000

Truth Tables / Positions	001 2	002 8	003 8	004 8	006 8	007 8	008 10	011 10	013 10	014 10	016 10	017 10	021 10	022 10	023 10	024 10	025 10	038 10	039 10	041 12	043 12	047 16	048 16	049 16	050 16
Code Series																									
• 29 = 29000	•	*	—	*	—	*	•	—	•	•	•	•	—	•	—	—	•	•	•	•	•	•	•	—	•
PC Terminations per Truth Table Code	S P W L	S P W —	— — —	S P W L	— — —	S P W —	S P W —	— — —	S P W L	S P W L	S P W L	S P W —	— — —	S P W —	— — —	— — —	S P W —	S — —	S — —	S — —	S P W —	S P W —	S P W —	— — —	S P W —

*Octal code achieved by dial stops.



TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 29000 MINISWITCH®



How to order standard switch modules
See page 79 for Assembly Ordering Instructions
All spaces must be filled for a complete part (switch) number
Example: 29/047/S/NS/A/G/O

Series
29 = 29000

Truth Table Code
See Truth Table code for 10, 12 & 16 positions.

PC Terminations
S = Direct solder (Standard)
P = Pin terminals
W = Wire wrap
L = Direct solder with diode provisions
M = Solder pins with diode provisions
N = Wire wrap with diode provisions

Stops **
NS = No stops.
For stops show first and last position.
(i.e.: 3 9 the dial will now read 3 through 9)

Lighting
O = No lighting

Color*
G = Standard all gloss black, white characters
B = Matte black case, glossy black dial, white characters.

Dial Options
S = Standard dial characters
A = 0-9, A-F (16 position only)
B = –, + repeating
C = 0, 5 repeating

Not all options are available in all series or codes. Some tooling charges may be required.

*For nonstandard colors and combinations consult factory.

*For stops on 12 or 16 position switches see modified standard ordering instructions, page 78, or consult factory.

Notes 1 — For nonstandard switch options and features not covered in the how to order chart, see modified ordering instruction section, page 78, or consult factory.

RECOMMENDED ASSEMBLY PANEL CUTOUT DIMENSIONS

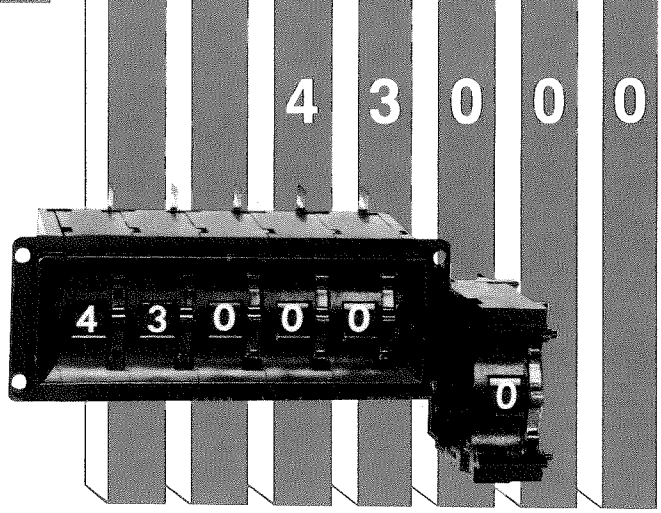
NUMBER OF 8.9(.35") STATIONS	A △3	B △3	C △3	D △3	E △3
1	27.9(1.10)	23.1(.91)	16.8(.66)	17.3(.68)	23.1(.91)
2	36.8(1.45)	32.0(1.26)	25.7(1.01)	26.2(1.03)	32.0(1.26)
3	45.7(1.80)	40.9(1.61)	34.5(1.36)	35.1(1.38)	40.9(1.61)
4	54.6(2.15)	49.8(1.96)	43.4(1.71)	43.9(1.73)	49.8(1.96)
5	63.5(2.50)	58.7(2.31)	52.3(2.06)	52.8(2.08)	58.7(2.31)
6	72.4(2.85)	67.6(2.66)	61.2(2.41)	61.7(2.43)	67.6(2.66)
7	81.3(3.20)	76.5(3.01)	70.1(2.76)	70.6(2.78)	76.5(3.01)
8	90.2(3.55)	85.3(3.36)	79.0(3.11)	79.5(3.13)	85.3(3.36)
9	99.1(3.90)	94.2(3.71)	87.9(3.46)	88.4(3.48)	94.2(3.71)
10	108.0(4.25)	103.1(4.06)	96.8(3.81)	97.3(3.83)	103.1(4.06)

Notes:
1. Installation data shown for typical Series 29000 miniature switch assembly.
△2. For details of circuit board terminals and electrical output, see individual module drawings.
△3. For assembly and cutout dimensions with spacer(s) included, add 8.89(.350), for each spacer, to dimensions "A" through "E".
4. Either two or four hole mounting may be used.
5. Stops are optional and field installable. Stop strength 5 lbs. min.
6. Prime dimensions are metric.

WINDOW AND CHARACTER DIMENSIONS

	Window Dimensions		Max. character	Visual
Positions	H	W	Height	Comparison
10	6.60 (.260)	4.01 (.158)	5.08 (.200)	3
12	6.60 (.260)	4.01 (.158)	4.06 (.160)	3
16	4.19 (.165)	4.01 (.158)	3.17 (.125)	3

Character heights cannot be increased from those shown. For maximum usable window width, consult factory.



Series Miniswitch®

10 standard dial positions
Rear mounted
Switch O.D. size 12.70 (.500) wide x 30.30 (1.193) high
Distributor or factory direct

DESCRIPTION

Series 43000 Miniswitch® is economically priced and has been engineered to incorporate many outstanding options only found in much higher priced switches. Two examples are the LED lighting and the snap-together feature of modules to make up your desired assembly without the use of tools.

FEATURES

- *Special dial characters
- Field installable dial stops
- *Special markings on switch case and spacers
- 6.35 (.250) and 12.70 (.500) spacers
- Available in most popular codes off the shelf through distribution
- LED replaceable lighting
- *Optional window against dust and debris
- *Provisions for mounting components
- Field or factory assembled to customer specifications

*See switch parameters for details or consult factory.

SPECIFICATIONS

MECHANICAL

Operating force: 4 to 10 ounces.
Life: Over 500,000 detent operations at 25 °C.
Weight: .35 ounce per module (approx.).
Standard finish and color: Molded matte black.

ELECTRICAL

Rated electrical loads: 0.125 amps at 28 VAC or 28 VDC. Non-switching current: 3 amps max.
Contact resistance: 100 milliohms max. initial.
Dielectric strength: 500 VRMS.
Terminations: Printed circuit board for solder termination is standard; pin terminals are optional.
Mounting hardware torque: 2 inch-pounds (2.3 kilogram-centimeters) max. on mounting screws.

LIGHTING (OPTIONAL)

Internal LED standard colors: Clear and Red. 20 milliamps recommended current (30 milliamps max.). Voltage drop across LED: 2.2V.

ENVIRONMENTAL

Operating temperature range: -20 °C to + 65 °C.
Storage temperature range: -40 °C to + 85 °C.
Moisture resistance: 1 megohm minimum insulation resistance after 10 days at 95% relative humidity.
Shock: 100 G's, 6 milliseconds duration, sawtooth.
Vibration: 15 G's at 70-2000 Hz; .06" double amplitude at 10-70 Hz.

MATERIALS:

Printed circuit board: Epoxy fiberglass.
Contact material: Precious metal alloy
Structural parts: Polycarbonate and acetal thermoplastics.
Detent spring: Stainless steel.

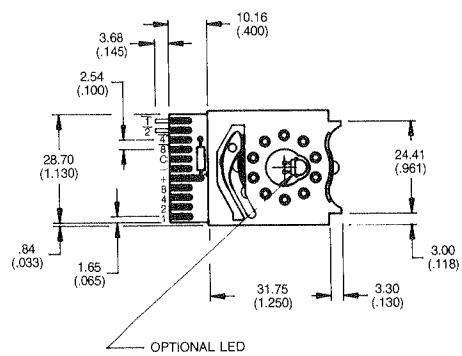
IMPORTANT NOTICE

Do not allow flux or cleaning agent to enter switch. Use only solution of 40% isopropyl alcohol in distilled water for cleaning agent. For additional information about recommended cleaning method, contact Digitran.

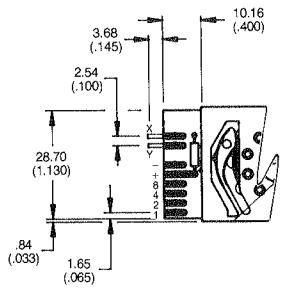
TRUTH TABLE CODES SERIES 43000

Truth Tables Positions	001 2	002 8	003 8	004 8	006 8	007 8	008 10	011 10	013 10	014 10	016 10	017 10	021 10	022 10	023 10	024 10	025 10	038 10	039 10	041 12	043 12	047 16	048 16	049 16	050 16
Code Series																									
• 43 = 43000	•	*	—	**	—	*	•	—	**	•	**	•	—	****	—	•	****	—	—	—	—	—	—	—	—
PC Terminations per Truth Table Code	S	S	—	S	—	S	S	—	S	S	S	S	—	S	—	S	S	—	—	—	—	—	—	—	—
	P	P	—	P	—	P	P	—	P	P	P	P	—	P	—	P	P	—	—	—	—	—	—	—	—
	W	W	—	W	—	W	W	—	W	W	W	W	—	W	—	W	W	—	—	—	—	—	—	—	—
	—	—	—	L	—	—	—	—	L	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

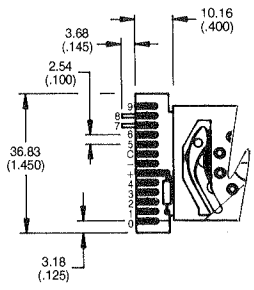
*Octal code achieved by dial stops.
**Printed circuit board code is BCD plus complement.
****Printed circuit board code is 9's complement plus complement.



BCD + COMPLIMENT

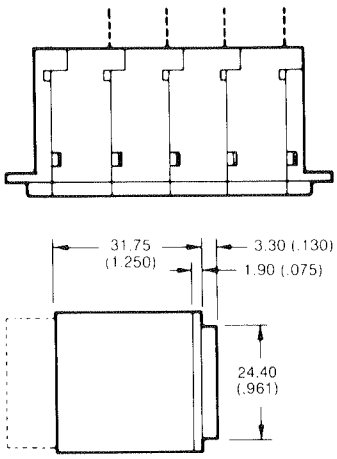


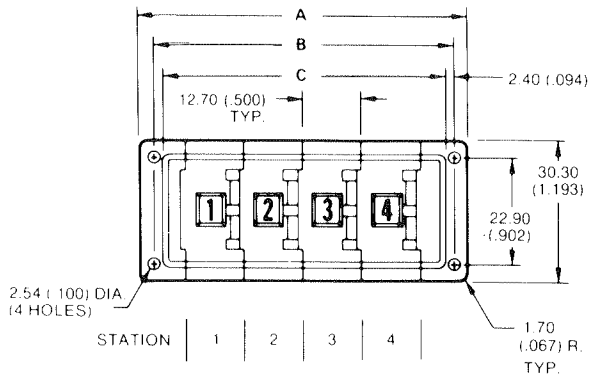
BCD TRUE/NOT TRUE

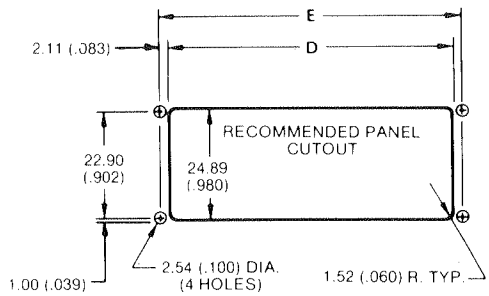


SINGLE POLE DECIMAL

TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 43000 MINISWITCH®







How to order standard switch modules
See page 79 for Assembly Ordering Instructions
All spaces must be filled for a complete part (switch) number
Example: 43/017/P/NS/C/B/G

Series
43 = 43000

Truth Table Code
See Truth Table code for 8 or 10 positions.

PC Terminations
S = Direct Solder (Standard)
P = Pin Terminals
W = Wire Wrap
L = Direct solder with diode provisions
M = Solder pins with diode provisions
N = Wire wrap with diode provisions

Stops
NS = No stops
For stops show first and last position (i.e.: 3 9 the dial will now read 3 through 9)

Lighting*

COLOR	LAMP VOLTAGE
O = No Lighting	
E = Clear	5
F = Clear	14
G = Clear	28
H = Red	5
J = Red	14
K = Red	28
N = Red	No Resistor
R = Clear	No Resistor

Color**
B = Matte black case, glossy black dial, white characters.

Dial options
S = Standard dial characters
B = −, + repeating
C = 0, 5 repeating

Not all options are available in all series or codes. Some tooling charges may be required.

*When ordering a lighted switch from this series the lighting is internal.
**For nonstandard colors and combinations consult factory.

Notes 1 — For nonstandard switch options and features not covered in the how to order chart, see modified ordering instruction section, page 78, or consult factory.

RECOMMENDED ASSEMBLY PANEL CUTOUT DIMENSIONS

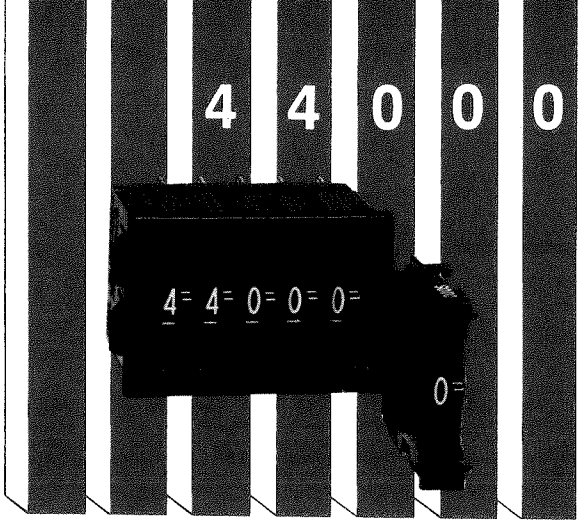
NO. OF MODULES	A	B	C	D	E
1	32.0 (1.26)	27.7 (1.09)	22.9 (.90)	23.5 (.93)	27.7 (1.09)
2	44.7 (1.76)	40.4 (1.59)	35.6 (1.40)	36.2 (1.43)	40.4 (1.59)
3	57.4 (2.26)	53.1 (2.09)	48.3 (1.90)	48.9 (1.93)	53.1 (2.09)
4	70.1 (2.76)	65.8 (2.59)	61.0 (2.40)	61.6 (2.43)	65.8 (2.59)
5	82.8 (3.26)	78.5 (3.09)	73.7 (2.90)	74.3 (2.93)	78.5 (3.09)
6	95.5 (3.76)	91.2 (3.59)	86.4 (3.40)	87.0 (3.43)	91.2 (3.59)
7	108.2 (4.26)	103.9 (4.09)	99.1 (3.90)	99.7 (3.93)	103.9 (4.09)
8	120.9 (4.76)	116.6 (4.59)	111.8 (4.40)	112.4 (4.43)	116.6 (4.59)
9	133.6 (5.26)	129.3 (5.09)	124.5 (4.90)	125.1 (4.93)	129.3 (5.09)
10	146.3 (5.76)	142.0 (5.59)	137.2 (5.40)	137.8 (5.43)	142.0 (5.59)

NOTES:

1. Drawing tolerances: .X = ±.8 (.03), .XX = ±.25 (.010).
2. Prime dimensions are metric.

WINDOW AND CHARACTER DIMENSIONS

	Window Dimensions		Max.character	Visual
Positions	H	W	Height	Comparisons
8	6.04 (.238)	7.36 (.290)	5.08(.200)	3
10	6.04 (.238)	7.36 (.290)	5.08(.200)	3



Series Slimswitch®

10 Standard Dial Positions
Switch O.D. sizes 8.00 (.315) wide
x 34.00 (1.339) high
Front mounted
Distributor or factory direct

DESCRIPTION

Series 44000 Slimswitch® is engineered for high reliability, compact size and at a very economical price. Like the Series 43000 and 45000, these thumbwheels were the first to offer optional LED lighting, maintenance free dependability and exceptional visibility. Along with their compact size they also offer the ease and convenience of assemblies that snap-together and the 44000 mounts to the panel without the use of any tools.

FEATURES

- Snap-in front mount (Series 44000). Panel recommended thickness minimum 1.58 (.062) maximum 4. (.158)
- Dial stops field installable
- *Special marking on spacers
- *Special dial characters
- Red or clear replaceable LED lighting
- 8.00 (.315) Spacers
- *Provisions for mounting components
- Available in most popular codes, off the shelf through distribution
- Field assembly or factory assembled to customer specifications

*See switch parameters for details or consult factory.

SPECIFICATIONS

MECHANICAL

Operating force: 4 to 10 ounces.
Life: Over 500,000 detent operations at 25 °C.
Weight: .25 ounce per module (approx.).
Standard finish and color: Molded matte black.

ELECTRICAL:

Rated electrical loads: 0.125 amps at 28 VAC or 28 VDC. Non-switching current: 3 amps max.
Contact resistance: 100 milliohms max. initial.
Insulation resistance: 1000 megohms min.
Dielectric strength: 500 VRMS.
Terminations: Printed circuit board for solder termination is standard; pin terminals are optional.
Mounting hardware torque: No mounting hardware required.

LIGHTING (OPTIONAL)

Internal LED standard colors: Clear and Red. 20 milliamps recommended current (30 milliamps max.). Voltage drop across LED: 2.2V.

ENVIRONMENTAL:

Operating temperature range: –20 °C to +65 °C.
Storage temperature range: –40 °C to +85 °C.
Moisture resistance: 1 megohm minimum insulation resistance after 10 days at 95% relative humidity.
Shock: 100 G's, 6 milliseconds duration, sawtooth.
Vibration: 15 G's at 70-2000 Hz; .06" double amplitude at 10-70 Hz.

MATERIALS:

Printed circuit board: Epoxy fiberglass.
Contact material: Precious metal alloy
Structural parts: Polycarbonate and acetal thermoplastics.
Detent spring: Stainless steel.

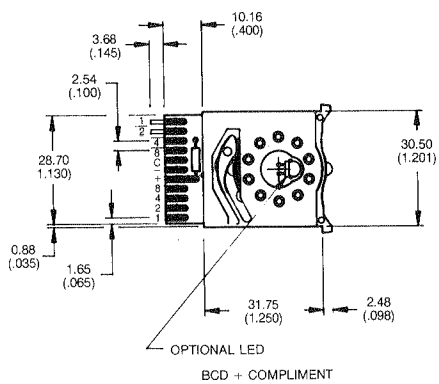
IMPORTANT NOTICE

Do not allow flux or cleaning agent to enter switch. Use only solution of 40% isopropyl alcohol in distilled water for cleaning agent. For additional information about recommended cleaning method, contact Digitran.

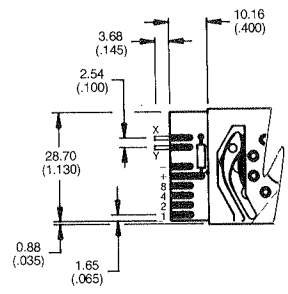
TRUTH TABLE CODES SERIES 44000

Truth Tables Positions	001 2	002 8	003 8	004 8	006 8	007 8	008 10	011 10	013 10	014 10	016 10	017 10	021 10	022 10	023 10	024 10	025 10	038 10	039 10	041 12	043 12	047 16	048 16	049 16	050 16
Code Series																									
• 44 = 44000	•	*	—	**	—	*	•	—	**	•	**	•	—	****	—	•	****	—	—	—	—	—	—	—	—
PC Terminations per Truth Table Code	S P W —	S P W —	— — —	S P W L	— — —	S P W —	S P W —	— — —	S P W L	S P W —	S P W —	S P W —	— — —	S P W —	— — —	S P W —	S P W —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —

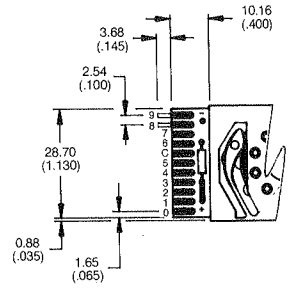
*Octal code achieved by dial stops.
**Printed circuit board code is BCD plus complement.
****Printed circuit board code is 9's complement plus complement.



BCD + COMPLIMENT

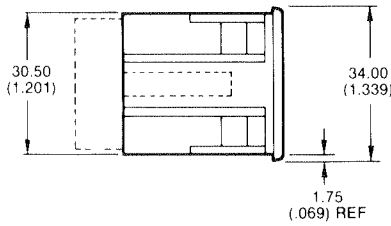


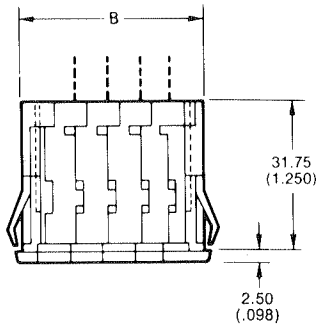
BCD TRUE/NOT TRUE

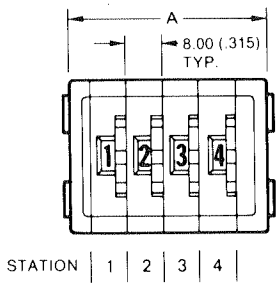


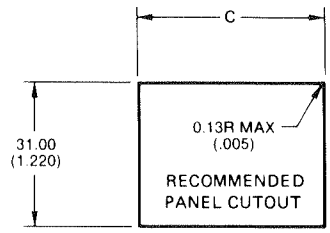
SINGLE POLE DECIMAL

TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 44000 SLIMSWITCH®









How to order standard switch modules
See page 79 for Assembly Ordering Instructions
All spaces must be filled for a complete part (switch) number

Example: 44/008/S/06/S/B/E

Series
44 = 44000

Truth Table Code
See Truth Table code for 8 or 10 positions.

PC Termination
S = Direct solder (Standard)
P = Pin terminals
W = Wire wrap
L = Direct solder with diode provisions
M = Solder pins with diode provisions
N = Wire wrap with diode provisions

Stops
NS = No stops.
For stops show first and last position.
(i.e.: 3 9 the dial will will read 3 through 9).

Lighting*

COLOR	LAMP VOLTAGE
O = No Lighting	
E = Clear	5
F = Clear	14
G = Clear	28
H = Red	5
J = Red	14
K = Red	28
N = Red	No Resistor
K = Clear	No Resistor

Color**
B = Matte black case, glossy black dial, white characters.

Dial Options
S = Standard dial characters.
B = −, + repeating
C = 0, 5 repeating

Not all options are available in all series or codes. Some tooling charges may be required.

*When ordering a lighted switch from this series the lighting is internal.
**For nonstandard colors and combinations consult factory.

Notes 1 — For nonstandard switch options and features not covered in the how to order chart, see modified ordering instruction section, page 78, or consult factory.

RECOMMENDED ASSEMBLY PANEL CUTOUT DIMENSIONS

NO. OF MODULES	A	B	C
1	18.5 (.728)	16.00 (.630)	16.60 (.654)
2	26.5 (1.043)	24.00 (.945)	24.60 (.969)
3	34.5 (1.358)	32.00 (1.260)	32.60 (1.283)
4	42.5 (1.673)	40.00 (1.575)	40.60 (1.598)
5	50.5 (1.988)	48.00 (1.890)	48.60 (1.913)
6	58.5 (2.303)	56.00 (2.205)	56.60 (2.228)
7	66.5 (2.618)	64.00 (2.520)	64.60 (2.543)
8	74.5 (2.933)	72.00 (2.835)	72.60 (2.858)
9	82.5 (3.248)	80.00 (3.150)	80.60 (3.173)
10	90.5 (3.563)	88.00 (3.465)	88.60 (3.488)

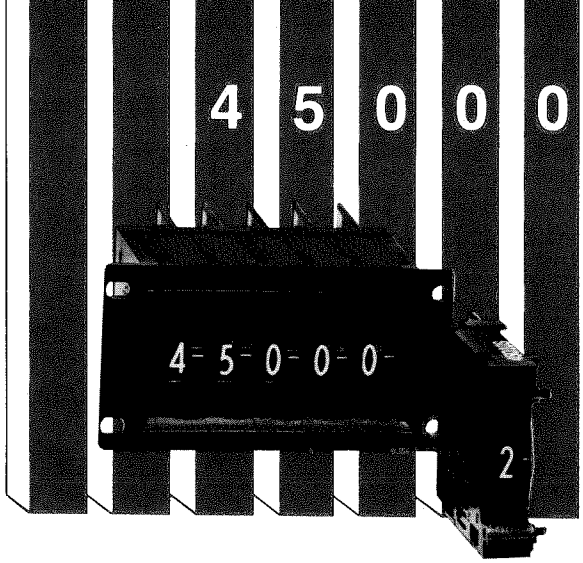
NOTES:

1. Drawing tolerances: .X = ±.8 (.03), .XX = ±.25 (.010).
2. Prime dimensions are metric.

WINDOW AND CHARACTER DIMENSIONS

Positions	Window Dimensions H	Window Dimensions W	Max.character Height	Visual Comparisons
8	6.90 (.272)	3.04 (.120)	5.08(.200)	3
10	6.90 (.272)	3.04 (.120)	5.08(.200)	3

Character heights cannot be increased from those shown. For maximum usable window width, consult factory.



Series Slimswitch®

10 Standard Dial Positions
Switch O.D. sizes 8.00 (.315) wide
x 30.40 (1.97) high
Rear mounted
Distributor or factory direct

DESCRIPTION

Series 45000 Slimswitch® is engineered for high reliability, compact size and at a very economical price. Like the Series 43000/44000, these thumbwheels are the first to offer optional LED lighting, maintenance free dependability and exceptional visibility. Along with their compact size they also offer the ease and convenience of assemblies that snap-together.

FEATURES

- Dial stops field installable
- *Special marking on spacers
- *Special dial characters
- Red or clear replaceable LED lighting
- 8.00 (.315) Spacers
- *Provisions for mounting components
- Available in most popular codes, off the shelf through distribution
- Field assembly or factory assembled to customer specifications

*See switch parameters for details or consult factory.

SPECIFICATIONS

MECHANICAL

Operating force: 4 to 10 ounces.
Life: Over 500,000 detent operations at 25 °C.
Weight: .25 ounce per module (approx.).
Standard finish and color: Molded matte black.

ELECTRICAL:

Rated electrical loads: 0.125 amps at 28 VAC or 28 VDC. Non-switching current: 3 amps max.
Contact resistance: 100 milliohms max. initial.
Insulation resistance: 1000 megohms min.
Dielectric strength: 500 VRMS.
Terminations: Printed circuit board for solder termination is standard; pin terminals are optional.
Mounting hardware torque: 2 inch-pounds (2.3 kilogram-centimeters) max. on mounting screws.

LIGHTING (OPTIONAL)

Internal LED standard colors: Clear and Red. 20 milliamps recommended current (30 milliamps max.). Voltage drop across LED: 2.2V.

ENVIRONMENTAL:

Operating temperature range: −20 °C to + 65 °C.
Storage temperature range: −40 °C to + 85 °C.
Moisture resistance: 1 megohm minimum insulation resistance after 10 days at 95% relative humidity.
Shock: 100 G's, 6 milliseconds duration, sawtooth.
Vibration: 15 G's at 70-2000 Hz; .06" double amplitude at 10-70 Hz.

MATERIALS:

Printed circuit board: Epoxy fiberglass.
Contact material: Precious metal alloy.
Structural parts: Polycarbonate and acetal thermoplastics.
Detent spring: Stainless steel.

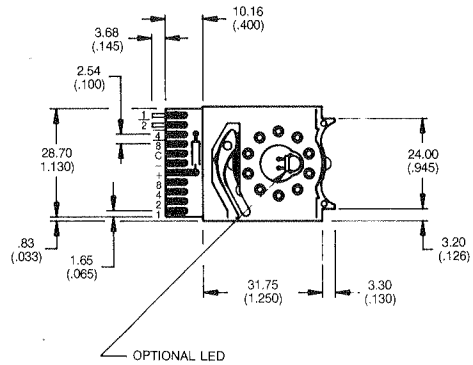
IMPORTANT NOTICE

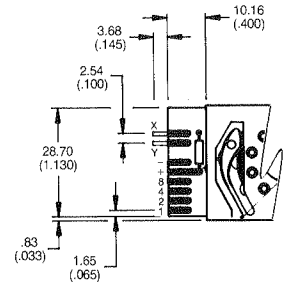
Do not allow flux or cleaning agent to enter switch. Use only solution of 40% isopropyl alcohol in distilled water for cleaning agent. For additional information about recommended cleaning method, contact Digitran.

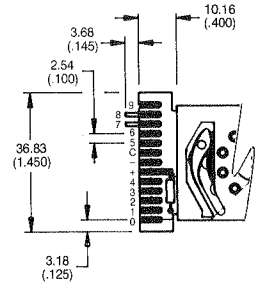
TRUTH TABLE CODES SERIES 45000

Truth Tables	001	002	003	004	006	007	008	011	013	014	016	017	021	022	023	024	025	038	039	041	043	047	048	049	050
Positions	2	8	8	8	8	8	10	10	10	10	10	10	10	10	10	10	10	10	10	12	12	16	16	16	16
Code Series																									
• 45 = 45000	•	*	—	**	—	*	•	—	**	•	**	•	—	****	—	•	****	—	—	—	—	—	—	—	—
PC Terminations per Truth Table Code	S	S	—	S	—	S	S	—	S	S	S	S	—	S	—	S	S	—	—	—	—	—	—	—	—
	P	P	—	P	—	P	P	—	P	P	P	P	—	P	—	P	P	—	—	—	—	—	—	—	—
	W	W	—	W	—	W	W	—	W	W	W	W	—	W	—	W	W	—	—	—	—	—	—	—	—
	—	—	—	L	—	—	—	—	L	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

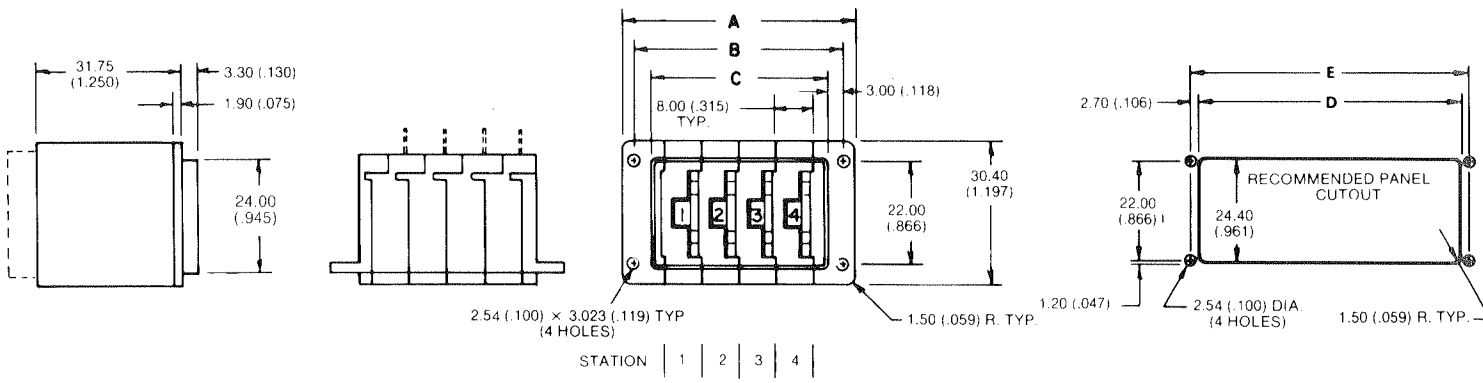
*Octal code achieved by dial stops.
**Printed circuit board code is BCD plus complement.
****Printed circuit board code is 9's complement plus complement.







TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 45000 SLIMSWITCH®



How to order standard switch modules

See page 79 for Assembly Ordering Instructions

All spaces must be filled for a complete part (switch) number

Example: 45/008/S/06/S/B/E

Series

45 45000

Truth Table Code

See Truth Table code for 8 or 10 positions.

PC Termination

S = Direct solder (Standard)
P = Pin terminals
W = Wire wrap
L = Direct solder with diode provisions
M = Solder pins with diode provisions
N = Wire wrap with diode provisions

Stops

NS = No stops.
For stops show first and last position.
(i.e.: 3 9 the dial will will read 3 through 9).

Lighting*

COLOR	LAMP VOLTAGE
O = No Lighting	
E = Clear	5
F = Clear	14
G = Clear	28
H = Red	5
J = Red	14
K = Red	28
N = Red	No Resistor
K = Clear	No Resistor

Color**

B = Matte black case, glossy black dial, white characters.

Dial Options

S = Standard dial characters.
B = −, + repeating
C = 0, 5 repeating

Not all options are available in all series or codes. Some tooling charges may be required.

*When ordering a lighted switch from this series the lighting is internal.
**For nonstandard colors and combinations consult factory.

Notes 1 — For nonstandard switch options and features not covered in the how to order chart, see modified ordering instruction section, page 78, or consult factory.

RECOMMENDED ASSEMBLY PANEL CUTOUT DIMENSIONS

NO. OF MODULES	A	B	C	D	E
1	26.0 (1.02)	21.0 (.827)	15.0 (.591)	15.6 (.614)	21.0 (.827)
2	34.0 (1.34)	29.0 (1.142)	23.0 (.906)	23.6 (.929)	29.0 (1.142)
3	42.0 (1.65)	37.0 (1.457)	31.0 (1.220)	31.6 (1.244)	37.0 (1.457)
4	50.0 (1.97)	45.0 (1.772)	39.0 (1.535)	39.6 (1.559)	45.0 (1.772)
5	58.0 (2.28)	53.0 (2.087)	47.0 (1.850)	47.6 (1.874)	53.0 (2.087)
6	66.0 (2.60)	61.0 (2.402)	55.0 (2.165)	55.6 (2.189)	61.0 (2.402)
7	74.0 (2.91)	69.0 (2.717)	63.0 (2.480)	63.6 (2.504)	69.0 (2.717)
8	82.0 (3.23)	77.0 (3.031)	71.0 (2.795)	71.6 (2.819)	77.0 (3.031)
9	90.0 (3.54)	85.0 (3.346)	79.0 (3.110)	79.6 (3.134)	85.0 (3.346)
10	98.0 (3.86)	93.0 (3.661)	87.0 (3.425)	87.6 (3.449)	93.0 (3.661)

NOTES:

1. Drawing tolerances: .X = ±.8 (.03), .XX = ±.25 (.010).
2. Prime dimensions are metric.

WINDOW AND CHARACTER DIMENSIONS

Positions	Window Dimensions H	Window Dimensions W	Max.character Height	Visual Comparisons
8	6.90 (.272)	3.04 (.120)	5.08(.200)	3
10	6.90 (.272)	3.04 (.120)	5.08(.200)	3

Character heights cannot be increased from those shown. For maximum usable window width, consult factory.

Thumbwheel Switch Applications

This switching concept provides the solution to packaging density problems inherent in all the foregoing digital switch systems by conserving space on and behind the control panel. They are designed to reduce operator error while increasing both setting and reading speed accuracy.

Typical applications are:

- Pulse Generators
- Fuel vending
- Games
- Medical
- Machine control
- Marine
- Process control
- Security systems
- Communication systems
- Navigation systems
- Military ground support
- Test equipment
- Fast Food industry
- Pay TV