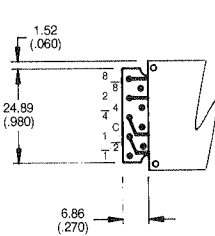
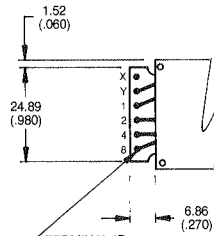


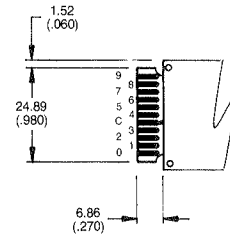
BCD



BCD + COMPLIMENT

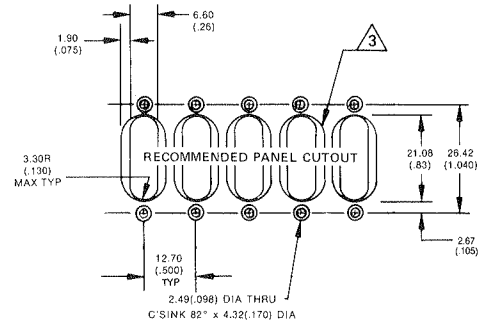
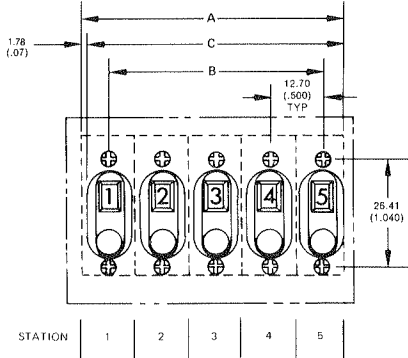
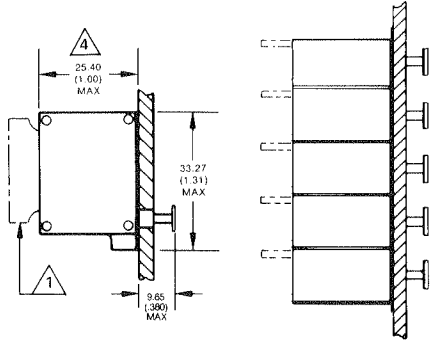


BCD TRUE/NOT TRUE



SINGLE POLE DECIMAL

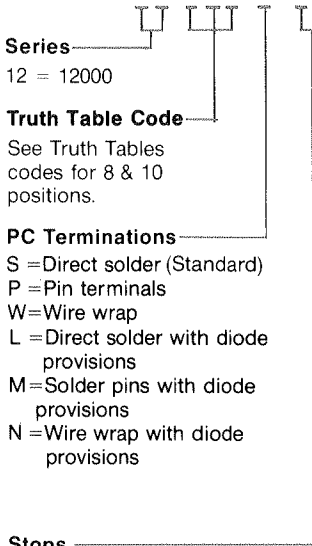
TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 12000 MINIBUTTON® UNIDIRECTIONAL



How to order standard switch modules *

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

Example; 1 2 / 0 0 1 / P / N S / S / F / O



Series
12 = 12000

Truth Table Code

See Truth Tables 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 available

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.
- B = -, + repeating
- C = 0, 5 repeating

RECOMMENDED ASSEMBLY PANEL CUTOUT DIMENSIONS

| NUMBER OF STATIONS 12.7(.5") | A | B | C |
|---------------------------------|-------------|-------------|-------------|
| 1 | 12.2(.48) | — | 10.4(.41) |
| 2 | 24.9(.98) | 12.7(.50) | 23.1(.91) |
| 3 | 37.6(1.48) | 25.4(1.00) | 35.8(1.41) |
| 4 | 50.3(1.98) | 38.1(1.50) | 48.5(1.91) |
| 5 | 63.0(2.48) | 50.8(2.00) | 61.2(2.41) |
| 6 | 75.7(2.98) | 63.5(2.50) | 73.9(2.91) |
| 7 | 88.4(3.48) | 76.2(3.00) | 86.6(3.41) |
| 8 | 101.1(3.98) | 88.9(3.50) | 99.3(3.91) |
| 9 | 113.8(4.48) | 101.6(4.00) | 112.0(4.41) |
| 10 | 126.5(4.98) | 114.3(4.50) | 124.7(4.91) |

Notes:

- 1 For details of circuit board terminals and electrical output, see drawing of specific type.
2. Hardware package, No. 12-93003, containing one .8(.030") gasket and two flat head screws is furnished for each module.
- 3 Edges may be beveled for improved number visibility on panels thicker than 1.57(1/16").
- 4 This dimension is based on 1.14(.045) max. gasket thickness. The typical compressed gasket thickness is .635(.025).
5. Tolerances: .X ± .8(0.03), .XX ± .25(0.010).
6. Prime dimensions are metric.

WINDOW AND CHARACTER DIMENSIONS

| Positions | Window Dimensions | | Max. character Height | Visual Comparison |
|-----------|-------------------|-------------|-----------------------|-------------------|
| | H | W | | |
| 8 | 5.74 (.226) | 4.19 (.165) | 4.31 (.170) | 3 |
| 10 | 5.74 (.226) | 4.19 (.165) | 4.31 (.170) | 3 |

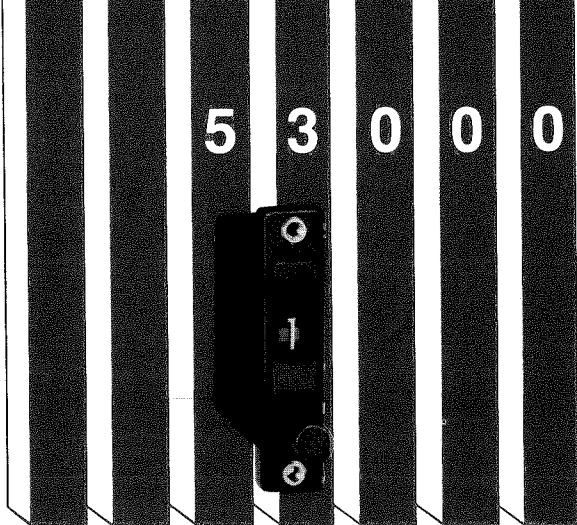
Not all options are available in all series or codes. Some tooling charges may be required.

*When ordering fully sealed switches consult factory.

**When ordering a lighted switch from this series, top lighting is standard. For other positions 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.

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



Series MinibuttonTM Unidirectional

Designed to meet MIL-S-22710/23

Method I and II

8, 10 & 12 dial positions

Rear mounted

Switch O.D. size 8.89 (.350) wide x

38.10 (1.500) high

Representatives or factory direct

DESCRIPTION

The Series 53000 MinibuttonTM is the compact version of Digitran 12000 Minibutton. With a modular width of only 8.89 (.350). The 53000 saves precious panel space, has fast response, and is easy to operate even with gloved fingers.

Engineered to meet the requirements of MIL-S-22710/23 this switch is especially suited to aerospace/military communications and navigational applications.

The Series 53000 meets all panel sealing requirements of MIL-S-22710/23 Methods I and II. The glass window seals the switch interior against external contamination and for panel-seal mounting feature the supplied gasket is all that's required.

FEATURES

- *Special dial characters
 - *Metal case facilitates RFI shielding
 - * Replaceable lighting
 - Fully sealed switch chamber and panel sealed
 - *Provisions for mounting components
- *See switch parameters section for details or consult factory.

SPECIFICATIONS

MECHANICAL

Operating force: 20-40 ounces.

Life: Minimum of 800,000 detent operations. All specifications valid after life cycling.

Standard color and finish: Matte black case with satin black dial and white dial markings.

Dial character height: .170".

Weight: .50 ounce (approximately).

Lighting (optional): Contact factory for specifications.

Switching characteristics: Multi-common units always non-shorting between commons.

ELECTRICAL:

Rated electrical loads: 28 VAC or 28 VDC at 125 milliamps resistive. Higher ratings available upon special request. Non-switching current: 3 amps maximum at rated operating temperature.

Contact resistance: Less than 100 milliohms initially between common and any output terminal. 60 milliohms maximum change during life of switch.

Insulation resistance: 1000 megohms minimum per MIL-STD-202, Method 302, Test Condition A, between any two non-connected terminals.

Dielectric strength: Per MIL-STD-202, Method 301. 750 VRMS for one minute between any two non-connected terminals; 250 VRMS at reduced barometric pressure.

ENVIRONMENTAL:

Moisture resistance: Per MIL-STD-202, Method 103, a ten-day test at 40° ± 2 °C and 90% to 95% relative humidity. Sample must measure 25 megohms minimum insulation resistance immediately after humidity test.

Thermal shock: -55 °C to +85 °C per MIL-STD-202, Method 107, Test Condition A.

Operating temperature: -65 °C to +85°C, (-65 °C to +71 °C lighted, 5V lamp, and -65 °C to +65 °C lighted, 28V lamp).

Shock: 100 G's, 6 milliseconds, per MIL-STD-202, Method 213, Test Condition I.

Vibration: 15 G's at 70-2000 Hz; .06" double amplitude at 10-70 Hz. (Ref: MIL-STD-202, Method 204, Test Condition B.) There shall be no contact opening for more than 1 microsecond (including bounce) during test.

Explosion proof (sealed modules only): Per MIL-STD-202, Method 109, with test load of 28 VDC @ 125 milliamps resistive.

Altitude: 0-70,000 ft. with corresponding derating of dielectric strength to 250 VRMS.

Salt spray (sealed modules only): Per MIL-STD-202, Method 101, Test Condition B. Measurements after exposure non-applicable.

Sand and dust (sealed modules only): Per MIL-STD-202, Method 110, Test Condition B.

MATERIALS:

Case: Cast aluminum.

Plastic parts: Polycarbonate, nylon and/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 1.

Detent spring and plunger return spring: Type 302 stainless steel.

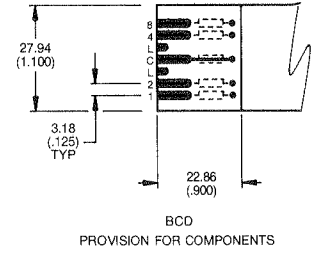
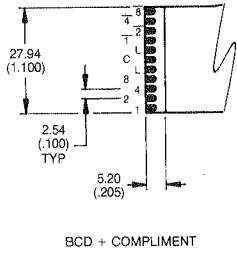
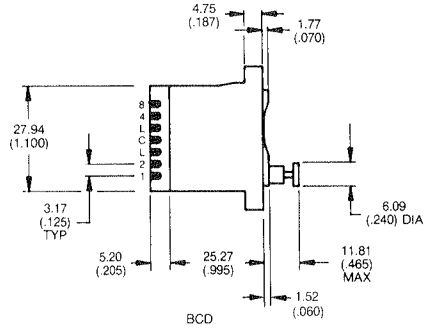
Contacts: Precious metal alloy.

IMPORTANT NOTICE:

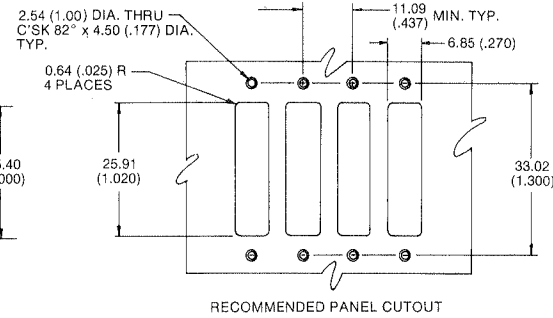
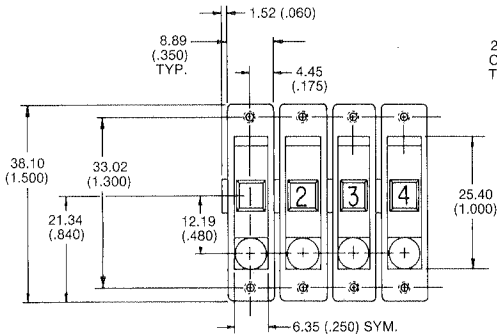
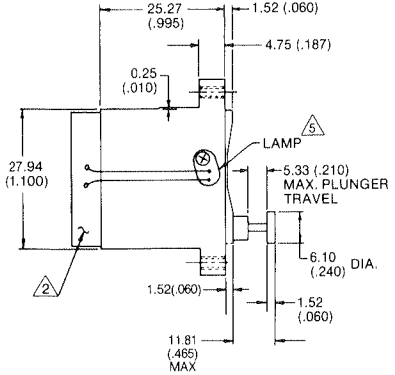
Do not allow flux or cleaning agent to enter switch. Use only 40% isopropyl alcohol in distilled water for cleaning agents. For additional information about recommended cleaning methods, contact Digitran.

TRUTH TABLE CODES SERIES 53000

| Truth Tables Positions | 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 |
|--------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code Series | 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 |
| • 53 = 53000 | --- | --- | --- | --- | --- | --- | --- | --- | • | • | • | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PC Terminations per Truth Table Code | --- | --- | --- | --- | --- | --- | --- | --- | S | S | S | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

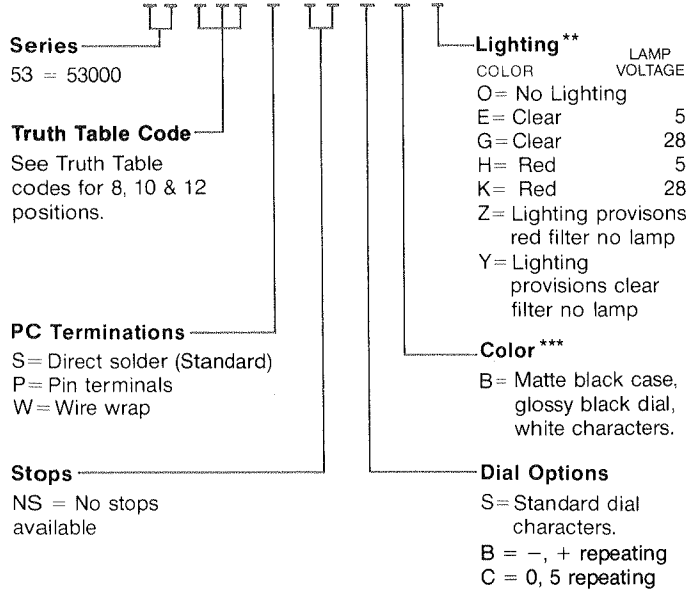


TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 53000 MINIBUTTON™



How to order standard switch modules*

All spaces must be filled for a complete part (switch) number
 Example: 5 3 / 0 1 4 / S / N S / S / B / E



NOTES:

1. Typical installation data for a back mounted series 53000 pushbutton module.
2. For details of circuit board terminals and electrical output, see drawing of specific module.
3. Hardware package 200693, containing one 1.57 (.062) thick gasket and two (2-56 x 1/2) flat head screws.
4. Prime dimensions are metric.
5. Lamps installed when lighted dial is required. (Side lighting shown; front and rear lighting also available.)

WINDOW AND CHARACTER DIMENSIONS

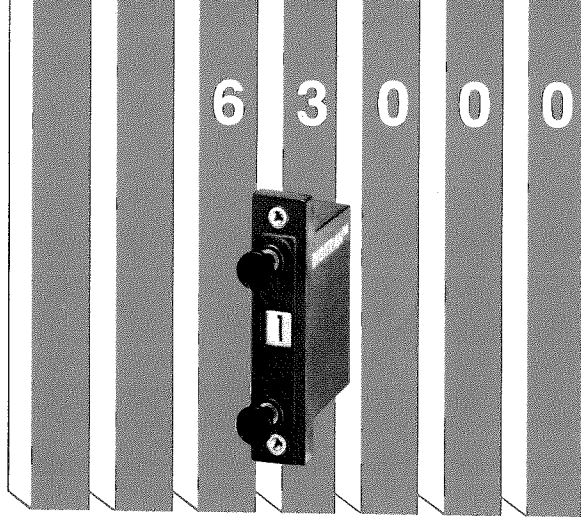
| Positions | Window Dimensions | | Max. character Height | Visual Comparison |
|-----------|-------------------|-------------|-----------------------|-------------------|
| | H | W | | |
| 8 | 5.715 (.225) | 3.93 (.155) | 4.31 (.170) | 3 |
| 10 | 5.715 (.225) | 3.93 (.155) | 4.31 (.170) | 3 |
| 12 | 5.715 (.225) | 3.93 (.155) | 4.31 (.170) | 3 |

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

- *When ordering fully sealed switches consult factory.
- **When ordering a lighted switch in this series, side lighting is standard. For other positions consult factory.
- ***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.

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



Series Minibutton[™]

Bi-directional

Designed to Meet MIL-S-22710
10 or 12 Standard Dial Positions
Rear Mounted
Switch O.D. Size 10.41 (.410) wide x
43.18 (1.70) high unlighted
Representative or Factory Direct

DESCRIPTION

The Series 63000 Bi-Directional Minibutton[™] is especially suited for navigation equipment, man-pack radios, general avionics and industrial applications involving severe environmental conditions.

The switch is panel-sealed, with the interior well protected against external contamination; it can also be ordered as a fully sealed environmentally impervious switch.

The 63000 provides fast response and is easy to use even with gloved fingers.

FEATURES

- *Special characters and dial positions
- *Factory installed dial stops
- Panel and fully sealed switch chamber
- Vertical configuration standard
 - *Horizontal non-standard character option
- *Metal case facilitates RFI shielding
- Replaceable lighting (unsealed switches only)

*See switch parameters for details or consult factory.

SPECIFICATIONS

Operating force: 20-40 ounces.

Life: 50,000 cycles at -65 °C to +85 °C.

Standard color and finish: Non-glare matte black with white characters.

Dial character height: .156".

Weight: .50 ounce (approximately).

Lighting (optional): Contact factory for specifications.

Switching characteristics: Multi-common units always non-shorting between commons.

Rated electrical loads: 28 VAC or 28 VDC at 125 milliamps resistive. Non-switching current: 3 amps max.

Contact resistance: 100 milliohms max. initially between common and any output terminal; 60 milliohms maximum change during life of switch.

Insulation resistance: 1000 megohms min. per MIL-STD-202, Method 302, Test Condition A between any two non-connected terminals.

Dielectric strength: Per MIL-STD-202, Method 301: 750 VRMS for one minute between any two non-connected terminals; 250 VRMS at reduced barometric pressure.

ENVIRONMENTAL:

Moisture resistance: Per MIL-STD-202, Method 103, a 10-day test at 40° ±2 °C and 90-95% relative humidity; sample must measure 25 megohms min. insulation resistance immediately after humidity test.

Thermal shock: -55 °C to +85 °C, per MIL-STD-202, Method 107, Test Condition A.

Operating temperature: -65 °C to +85 °C unlighted; -65 °C to +71 °C with 5-volt lamp. For special applications, contact factory.

Shock: Medium Impact: 100 G's, 6 milliseconds, per MIL-STD-202, Method 213, Test Condition I; no contact opening for more than 10 milliseconds. High Impact: Per MIL-STD-202, Method 207; no contact opening for more than 5 milliseconds.

Vibration: 15 G's at 70-2000 Hz; .06" double amplitude, 10-70 Hz per MIL-STD-202, Method 204, Test Condition B; no contact opening for more than 1 microsecond, including bounce.

Explosion proof (sealed modules only): Per MIL-STD-202, Method 109, with test load of 28 VDC at 125 milliamps resistive.

Altitude: 0-70,000 ft. with corresponding derating of dielectric strength to 250 VRMS.

Salt spray (sealed modules only): Per MIL-STD-202, Method 101, Test Condition B; measurements after exposure non-applicable.

Sand and dust (sealed modules only): Per MIL-STD-202, Method 110, Test Condition B.

MATERIALS:

Case: Cast aluminum.

Plastic parts: Polycarbonate, nylon and/or teflon.

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

Detent spring and plunger return spring: Type 302 stainless steel.

Contacts: Precious metal alloy.

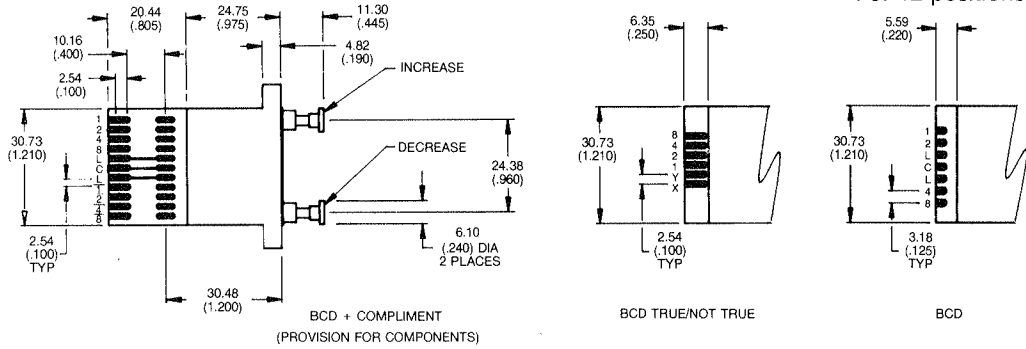
IMPORTANT NOTICE

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.

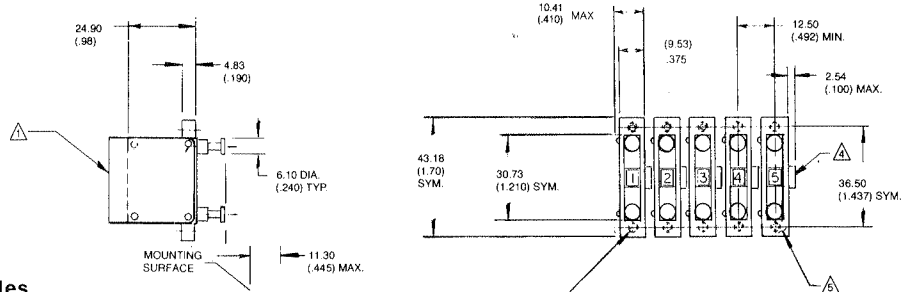
TRUTH TABLE CODES SERIES 63000

| Truth Tables Positions | 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 |
|--------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code Series | | | | | | | | | | | | | | | | | | | | | | | | | |
| • 63 = 63000 | | | | | | | | | • | • | • | | | | | | | | | * | * | | | | |
| PC Terminations per Truth Table Code | | | | | | | | | S | S | S | | | | | | | | | | | | | | |

* For 12 positions, consult factory.



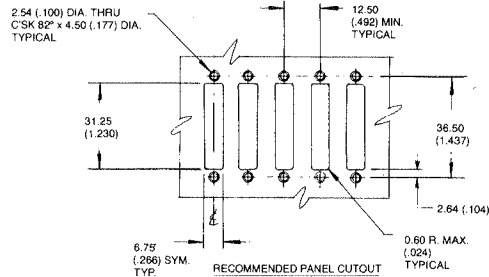
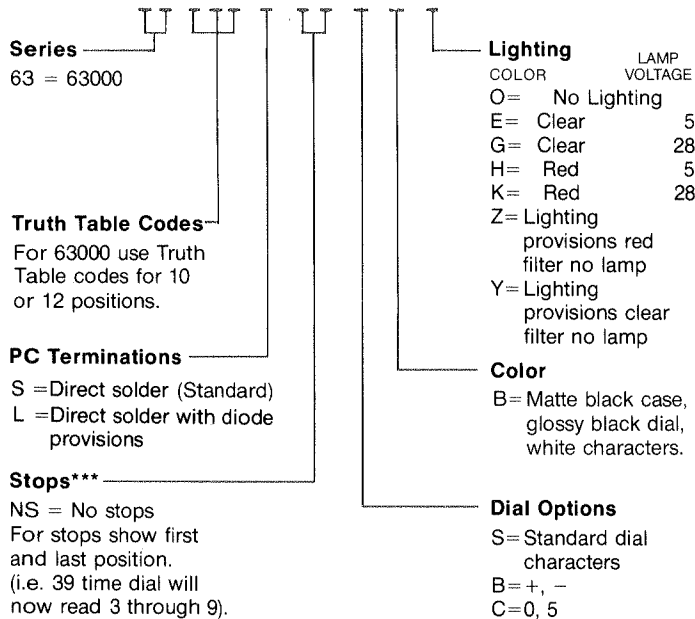
TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 63000 MINIBUTTON™



How to order standard switch modules

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

Example: 63/013/S/NS/S/B/O



NOTES:

- For details of circuit board terminals and electrical output, see drawing of specific module.
- Prime dimensions are metric.
- Hardware package contains one gasket and two flat head screws.
- Lamps installed with lighted dial.
- Mounting surface has conductive coating to provide R.F.I. shielding when specified.
- Tolerances: $x \pm 0.8 (.03)$; $xx \pm 0.25 (.010)$.

WINDOW AND CHARACTER DIMENSIONS

| Positions | Window Dimensions | | Max character Height | Visual Comparison |
|-----------|-------------------|-------------|----------------------|-------------------|
| | H | W | | |
| 10 | 5.74 (.226) | 4.31 (.170) | 4.31 (.170) | 3 |
| 12 | 5.74 (.226) | 4.31 (.170) | 3.96 (.156) | 3 |

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

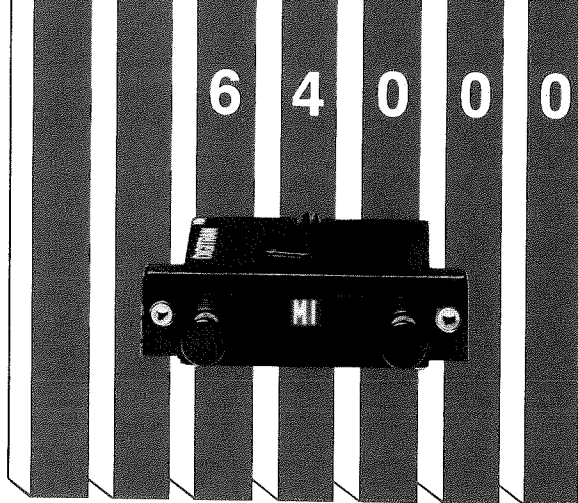
*When ordering fully sealed switches consult factory.

**Side lighting. For other locations consult factory.

***For stops on 12 position switches use non-standard ordering or consult factory.

****For non-standard 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.



Series MinibuttonTM Bi-Directional

Designed to meet MIL-S-22710
16 dial positions
Rear mounted
Switch O.D. size 14.48 (.570) wide x
45.7 (1.80) high unlighted
Representative or factory direct

DESCRIPTION

Engineered to meet all performance requirements of MIL-S-22710 the Series 64000 Bi-Directional MinibuttonTM is slightly larger than the Series 63000 and shares many of the same design features.

The 64000 also provides fast response and is easy to use even with gloved fingers. Applications include, mobile communications equipment, avionics and rugged industrial environment applications.

The switch is panel-sealed, with the interior well protected against external contamination. It can also be ordered as a fully sealed environmentally impervious switch.

FEATURES

- *Special characters and dial positions
- Factory installed dial stops
- *Can be ordered as a fully sealed switch
- *Panel sealing
- *Can be ordered in standard vertical or optional horizontal configurations
- *Metal case facilitates RFI shielding
- Replaceable lighting (unsealed switches)

*See switch parameters section for details or consult factory.

SPECIFICATIONS

MECHANICAL

Operating force: 20-40 ounces.

Life: 50,000 cycles at -65 °C to +85 °C.

Standard color and finish: Non-glare matte black with white characters.

Dial character height: .156".

Weight: .50 ounce (approximately).

Switching characteristics: Multi-common units always non-shorting between commons.

ELECTRICAL:

Rated electrical loads: 28 VAC or 28 VDC at 125 milliamps resistive. Non-switching current: 3 amps max.

Contact resistance: 100 milliohms max. initially between common and any output terminal; 60 milliohms maximum change during life of switch.

Insulation resistance: 1000 megohms min. per MIL-STD-202, Method 302, Test Condition A between any two non-connected terminals.

Dielectric strength: Per MIL-STD-202, Method 301: 750 VRMS for one minute between any two non-connected terminals; 250 VRMS at reduced barometric pressure.

ENVIRONMENTAL:

Moisture resistance: Per MIL-STD-202, Method 103, a 10-day test at 40° ±2 °C and 90-95% relative humidity; sample must measure 25 megohms min. insulation resistance immediately after humidity test.

Thermal shock: -55 °C to +85 °C, per MIL-STD-202, Method 107, Test Condition A.

Operating temperature: -65 °C to +85 °C unlighted; -65 °C to +71 °C with 5-volt lamp. For special applications, contact factory.

Shock: Medium Impact: 100 G's, 6 milliseconds, per MIL-STD-202, Method 213, Test Condition I; no contact opening for more than 10 milliseconds.

High Impact: Per MIL-STD-202, Method 207; no contact opening for more than 5 milliseconds.

Vibration: 15 G's at 70-2000 Hz; .06" double amplitude, 10-70 Hz per MIL-STD-202, Method 204, Test Condition B; no contact opening for more than 1 microsecond, including bounce.

Explosion proof (sealed modules only): Per MIL-STD-202, Method 109, with test load of 28 VDC at 125 milliamps resistive.

Altitude: 0-70,000 ft. with corresponding derating of dielectric strength to 250 VRMS.

Salt spray (sealed modules only): Per MIL-STD-202, Method 101, Test Condition B; measurements after exposure non-applicable.

Sand and dust (sealed modules only): Per MIL-STD-202, Method 110, Test Condition B.

MATERIALS:

Case: Cast aluminum.

Plastic parts: Polycarbonate, nylon and/or teflon.

Printed circuit board: Laminate per MIL-P-13949, Type GF, plated with nickel per Federal Spec QQ-N-290, Class 2, and gold plated per MIL-G-45204, Type II, Class 1.

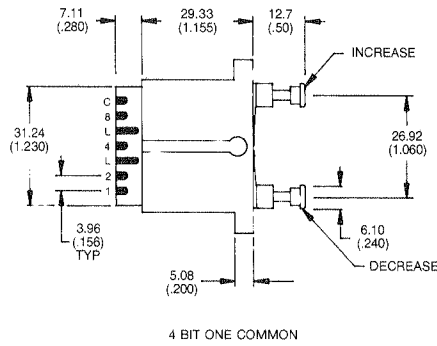
Detent spring and plunger return spring: Type 302 stainless steel.

Contacts: Precious metal alloy.

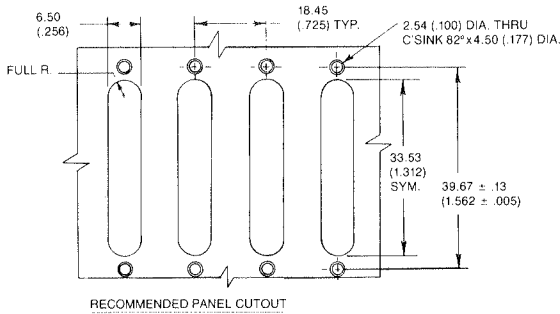
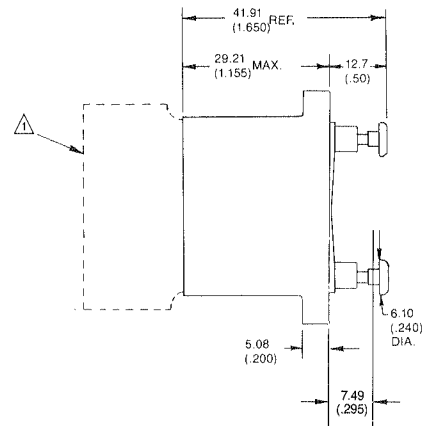
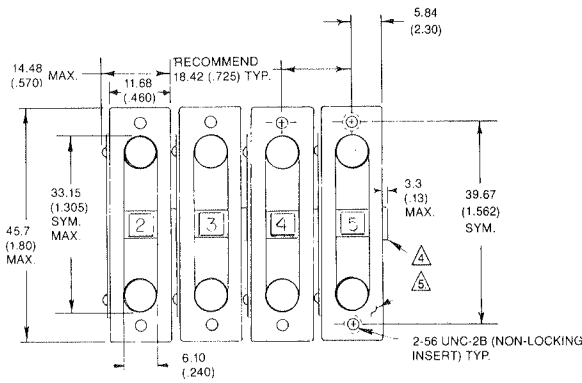
IMPORTANT NOTICE

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 Digitrans.

TRUTH TABLE CODES SERIES 64000
 Consult factory for codes and ordering instructions.



TYPICAL TERMINAL AND ELECTRICAL OUTPUT DETAILS SERIES 64000 MINIBUTTON™



NOTES:

1. For details of circuit board terminals and electrical output, see drawing of specific module.
2. Prime dimensions are metric.
3. Hardware package contains one gasket and two flat head screws.
4. Lamps installed with lighted dial.
5. Mounting surface has conductive coating to provide R.F.I. shielding when specified.
6. Tolerances: .x ± 0.8 (.03); .xx ± 0.25 (.010).

Ordering Instructions

When ordering the Series 64000 Minibutton™ contact your local Digitrans technical representative or the factory for available codes and ordering instructions.

WINDOW AND CHARACTER DIMENSIONS

| Positions | Window Dimensions | | Max. character Height | Visual Comparison |
|-----------|-------------------|-------------|-----------------------|-------------------|
| | H | W | | |
| *16 | 4.57 (.180) | 5.08 (.200) | 3.96 (.156) | 3 |

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

Minibutton™ Switch Applications

Unidirectional and Bi-directional

These switches are basically the same concept as the thumbwheel switches. Designed for specific application where the switch position is critical and the operator might be wearing gloves.

Typical applications are:

- Communications
- Marine
- Avionics/Ground support — Military/Commercial
- Security systems
- Test equipment
- Medical

