

**A4**

**Switches & Pilot Devices**



## TWTD Series: Heavy duty switches built to last

### Key features include:

- Variety of button sizes up to 2 9/16" (65mm)
- Rugged construction includes chrome plated zinc locking ring die cast zinc mounting threads, screw mounted contact blocks
- LED or incandescent illumination
- Transformer or full voltage
- Transparent contact windows
- Slow make, double break self cleaning contacts
- Modular construction for maximum flexibility
- Double nickel plated terminal screws
- Available assembled or as sub-components
- NEMA 4x and IP65 watertight/oiltight panel
- Large M3.5 screw terminals with captive sems plate

The rugged series of TWTD switches offers both variety and durability in an attractive design.

With button sizes up to 2 9/16" (65mm), chrome plated zinc locking rings, die cast zinc mounting threads, steel anti-rotation rings, and self cleaning contacts, the TWTD's are here to stay.

The TWTD series also offers either LED or incandescent illumination in full voltage and transformer models.

Transparent contact windows allow the viewing of IDEC's self cleaning slow-make/slow-break contacts.

Regardless of your switching needs, the TWTD series provides the kind of long lasting, industrial strength quality you've come to expect from IDEC.



UL Listed  
File No. E70646







SA® File No. LR48366



D Ref. No. 117617MC



Certificate No.  
2005010305145658

<b>Specifications</b>	Conforming to Standards	EN60947-1, EN60947-5-1, VDE0660-200, UL508, CSA C22-2 No.14
	Approvals	  UL Listed File No. E70646 File No. LR48366   Ref. No. 117617MC
	<b>Operating Temperature</b>	Operation: -25 to +50°C (without freezing) Storage: -40 to +70°C (without freezing)
	<b>Vibration Resistance</b>	10 to 55Hz, 98m/sec <sup>2</sup> (10g) conforming to IEC6068-2-6
	<b>Shock Resistance</b>	980m/sec <sup>2</sup> (100g) conforming to IEC6068-2-7
	<b>Electric Shock Protection</b>	Class 0 conforming to IEC60536
	<b>Degree of Protection</b>	IP65 (from front of the panel) (conforming to IEC60529) IP54 (key switches) NEMA 1, 2, 3, 3R, 3S, 4, 4X, 5, 12, 13 (conforming to NEMA ICS6-110)
	<b>Mechanical Life</b>	Momentary pushbuttons: 5,000,000 (900 operations per hour) All other switches: 500,000
	<b>Pollution Degree (conforming to IEC60947-1)</b>	3 for switches not using a transformer 2 for switches using a transformer
	<b>Mechanical-Electrical Specifications</b>	<b>Rated Operational Characteristics</b>
<b>Rated Insulation Voltage</b>		600V
<b>Rated Switching Over-Voltage</b>		Less than 4kV, conforming to IEC60947-1
<b>Rated Impulse Withstanding Voltage</b>		4kV for contact circuit 2.5kV for lamp circuit
<b>Rated Thermal Current</b>		10 Amp
<b>Minimum Switching Capacity</b>		5 mA at 3V AC/DC
<b>Contact Operation</b>		Slow break NC or NO, self-cleaning
<b>Operating Force</b>		Flush and extended pushbuttons—with 1NO or 1NC contact: 6.2±2N (momentary), 7.0±2N (maintained) Additional contacts—1NO or 1NC: +3.2N (momentary), + 3.3N (maintained)
<b>Terminal Referencing</b>		Conforming to CENELEC EN50005
<b>Recommended Terminal Torque</b>		0.8 N m (7.1 in lb.)
<b>External Short-Circuit Protection</b>		10A 250V fuse conforming to IEC60269-1
<b>Applicable Wire Size</b>		Minimum 1 x 22 AWG, max. 2 x 14 AWG or 1 x 12 AWG
<b>Contact Resistance</b>		Initial contact resistance of 50mΩ or less
<b>Contact Gap</b>		4mm (NO and NC) 2mm (NO-EM and NC-LB)
<b>Lamp Ratings</b>		Incandescent: 1 W LEDs: 6, 12, 24V: 20mA / 120, 240V: 10mA
<b>Maximum Inrush Current</b>		40 A (40 msec)
<b>Contact Material</b>	Silver	

<b>Contact Ratings</b>	Contact Ratings by Utilization Category IEC 60947-5-1		AC-15 (A600) DC-13 (P600)						
	<b>Contact Ratings by Utilization Category</b>								
	Operational Voltage			24V	48V	50V	110V	220V	440V
	Operation Current	AC 50/60 Hz	AC-12 Control of resistive loads & solid state loads	10A	—	10A	10A	6A	2A
			AC-15 Control of electromagnetic loads (> 72VA)	10A	—	7A	5A	3A	1A
	DC	DC-12 Control of resistive loads & solid state loads	8A	5A	—	2.2A	1.1A	—	
		DC-13 Control of electromagnets	5A	2A	—	1.1A	0.6A	—	

## E-Stops (Assembled)



A4

Switches & Pilot Devices

### Assembled E-Stops

**A V (L) D 3 (99) 11 (D) N - R - (24V)**

<p><b>Function</b> _____</p> <p>V: Pushlock Turn Reset Y: Push-Pull</p> <p><b>Illumination</b> _____</p> <p>Blank: None L: Illuminated</p> <p><b>Series Designation</b></p> <p>D: TWTD Series _____</p> <p><b>Button/Lens Size</b> _____</p> <p>3: 40mm Mushroom</p> <p><b>Illuminated Circuit (illuminated unit only)</b> _____</p> <p>99: Full Voltage (lamp determines voltage) 126: 120V AC Step Down Transformer 246: 240V AC Step Down Transformer 486: 480V AC Step Down Transformer</p>	<p><b>Lamp Voltage</b> (full voltage illuminated units only)</p> <p>6V: 6V AC/DC 12V: 12V AC/DC 24V: 24V AC/DC 120V: 120V AC/DC 240V: 240V AC/DC</p> <p><b>Button/Lens Color</b></p> <p>A: Amber    R: Red    W: White G: Green    S: Blue    Y: Yellow</p> <p><b>Lamp Type (illuminated units only)</b></p> <p>Blank: Incandescent D: LED</p> <p><b>Contact Arrangement</b></p> <p>10: 1NO      01: 1NC 20: 2NO      02: 2NC 11: 1NO/1NC    22: 2NO/2NC</p>
---	--



1. Use only when interpreting part numbers. Do not use for developing part numbers.
2. Custom contact configurations available, contact IDEC for details.

## E-Stops (Assembled)

### Part Numbers: E-Stop Switches

Style	Contacts	Part Number
<b>A4</b> Ø 40mm Pushlock Turn Reset 	1NO 1NC 1NO-1NC 2NO 2NC	AVD310N-R* AVD301N-R* AVD311N-R* AVD320N-R* AVD302N-R*
Ø 40mm Illuminated Pushlock Turn Reset 	1NO-1NC 2NO 2NC	AVLD39911⑤N-R-③* AVLD39920⑤N-R-③* AVLD39902⑤N-R-③*
Ø 40mm Push-Pull 	1NO 1NC 1NO-1NC 2NO 2NC	AYD310N-① AYD301N-① AYD311N-① AYD320N-① AYD302N-①
Ø 40mm Push-Pull 	1NO-1NC 2NO 2NC	AYLD39911⑤N-②-③** AYLD39920⑤N-②-③** AYLD39902⑤N-②-③**
Ø 40mm Momentary Push-Pull (3-position) 	1NO-1NC 1NC-1LB†	AYLD229911⑤N-②-③-TK962 AYLD229902S⑤N-②-③-TK962
	1NO-1NC 1NC-1LB†	AYLD22④11⑤N-②-TK962 AYLD22④02S⑤N-②-TK962

### 3 Position Push-Pull

Contact	Push	Center	Pull
NC (BST-001)	0	0	X
NC-LB (BST-001S)	0	X	X
NO (BST-010)	X	0	0
NO-EM (BST-010S)	X	X	0



- In place of ①, specify the button color code.
- In place of ②, specify the lens color code.
- In place of ③, specify the Full Voltage (lamp voltage) Code.
- In place of ④, specify the transformer voltage code.
- In place of ⑤, specify the Lamp Type code.
- \*Available in red only.
- 3 position push-pull available in spring return to center only.
- † The most common configuration for motor starting applications.
- For accessories, see page A4-188.
- For dimensions, see page A4-192.

### ① Button Color Code

Color	Code
Black	B
Green	G
Red	R
Blue	S
Yellow	Y

### ② LED Color Codes

Color	Code
Amber	A
Green	G
Red	R
Blue	S
White	W

### ③ Full Voltage Code

Voltage	Code
6V AC/DC	6V
12V AC/DC	12V
24V AC/DC	24V
120V AC	120V
240V AC	240V (LED only)

### ④ Transformer Voltage Codes

Voltage	Code
120VAC	126
240VAC	246
480VAC	486



Transformers step down to 6V.

### ⑤ Lamp Type Code

Lamp	Code
Incandescent	Blank
LED	D

### Part Numbers: Unibody E-Stops

Style	Contacts	Part Number
Ø 40mm Pushlock Turn Reset (available in Red only) 	1NO-1NC 2NC	HN1E-BV4F11-R* HN1E-BV4F02-R*
Illuminated Ø 40mm Pushlock Turn Reset (available in Red only) 	1NO-1NC 2NC	HN1E-LV4F11Q⑤-R-③ HN1E-LV4F02Q⑤-R-③



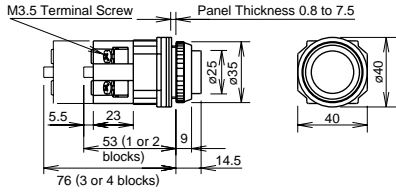
- \* Available in Red only.
- \*\*Not available in blue.
- In place of ③, specify Full Voltage Code.
- With single unit construction, the positive action contacts are integrated in the body of the switch. This provides an extra degree of safety and reliability for critical emergency stop functions.
- For nameplates and accessories, see page A3-96.
- For dimensions, see page A3-100.
- For sub-assembly part numbers, see next page.
- HN1E series E-stops comply with EN418, the IEC "E-Stop Addendum to the Low Voltage Directive," this includes "tamper proof" operation whereby a change of contact state is not possible by "teasing" or "floating" the operator.

## Dimensions — TWTD Series

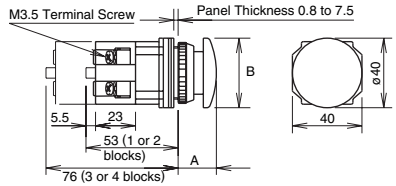
Switches & Pilot Devices

A4

### Pushbutton



### Mushroom Pushbutton w/Full Shroud

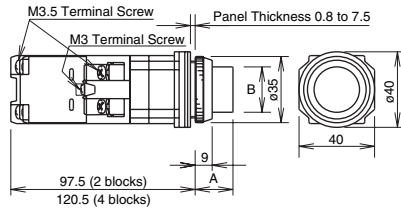


Pushbuttons	Dimension A	Dimension B
<b>Flush</b>	0.351" (9mm)	Ø 0.975" (25mm)
<b>Extended</b>	0.566" (14.5mm)	Ø 0.975" (25mm)
<b>Extended w/Full Shroud</b>	0.663" (17mm)	Ø 1.11" (28.5mm)
<b>Mushroom</b>		
<b>Mushroom w/Full Shroud</b>	0.858" (22mm)	Ø 1.56" (40mm)
<b>Jumbo Mushroom</b>	0.936" (24mm)	Ø 1.87" (48mm)
<b>Ø 1.56" (40mm)</b>	1.13" (29mm)	Ø 2.54" (65mm)
<b>Mushroom, Pushlock Turn Reset and Push-Pull</b>		
<b>Ø 1.56" (40mm)</b>	*0.975" (25mm) **0.975" (25mm)	Ø 1.56" (40mm) Ø 1.56" (40mm)

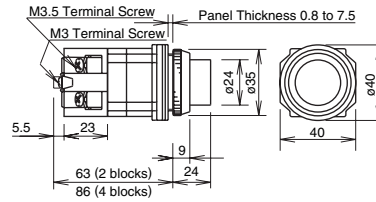
**Note:** \*Dimension when operator is in reset position.  
\*\*Dimension when operator is in pull position.

### Illuminated Pushbuttons

#### w/AC Adapter w/Transformer



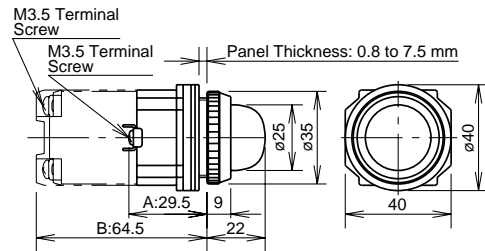
#### Full Voltage



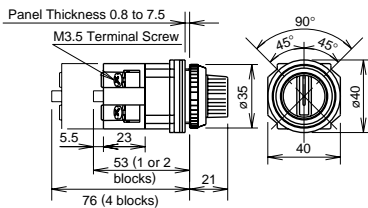
Illuminated Pushbuttons	Dimension A	Dimension B
<b>Flush w/Full Shroud</b>	0.975" (25mm) 0.995" (25.5mm)	Ø 0.936" (24mm) Ø 0.936" (24mm)
<b>Extended w/Full Shroud</b>	0.741" (19mm) 0.761" (19.5mm)	Ø 0.936" (24mm) Ø 0.936" (24mm)
<b>Ø 1.56" (40mm) Mushroom Pushlock Turn Reset, Push-Pull</b>	*0.975" (25mm) **0.975" (25mm)	Ø 1.56" (40mm) Ø 1.56" (40mm)

**Note:** \*Dimension when operator is in reset position.  
\*\*Dimension when operator is in pull position.

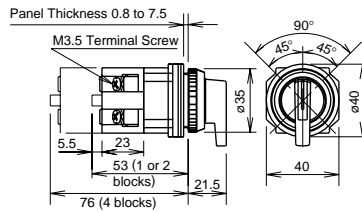
### Pilot Lights



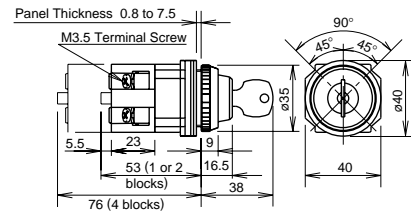
### Selector Switches Knob



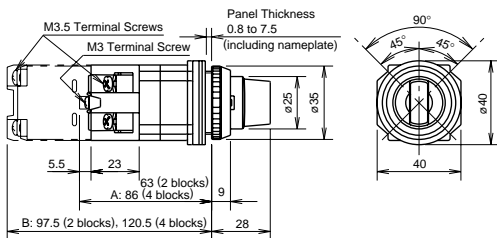
### Lever



### Key



### Illuminated Knob



All measurements in mm.