

Ø30

Switches & Pilot Lights

TWN/TWND Series

Datasheet

Over 60 years of experience

Since 1958, IDEC has been relentlessly developing control switches that provide high level of safety and operability.



Plastic TWN Series

The all-time bestseller since first developed. Suitable for versatile applications.

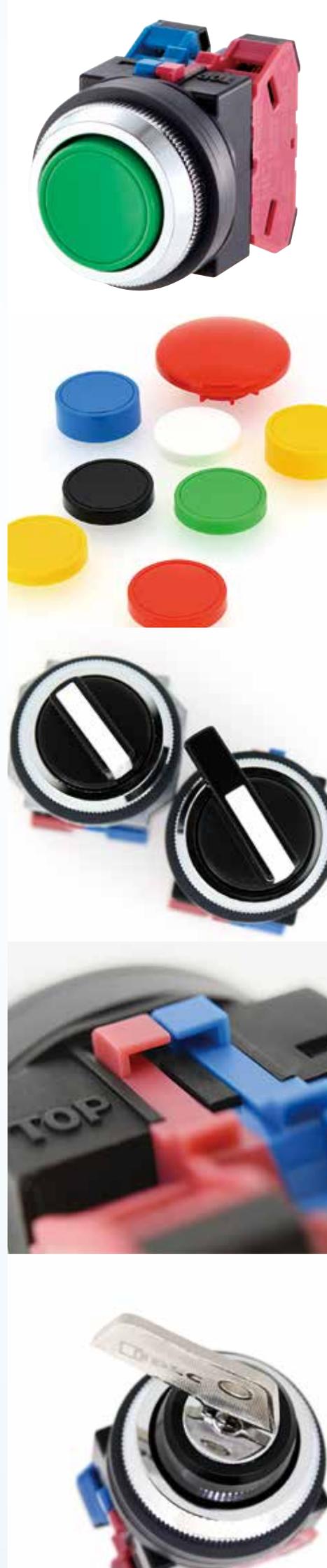
▶ Page 14



Diecast Zinc TWND series

Heavy-duty switches for tough industrial usage.

▶ Page 30



- Selection Guide
- Ratings/ Specifications
- LED Ratings
- Specifications
- Degree of Protection
- Ordering
- Part No. Development
- TWN Series
- TWND Series Diecast Zinc

Function	Pushbutton					
Category	Flush		Extended		Extended with Half Shroud	
	Momentary/Maintained		Momentary/Maintained		Momentary/Maintained	
Shape						
Model	ABN1 AON1	ABD1 AOD1	ABN2 AON2	ABD2 AOD2	ABN2G AON2G	ABGD2 AOGD2
Page	14	30	14	30	14	30

Function	Pushbutton					
Category	Extended with Full Shroud		Mushroom		Mushroom with Full Shroud	
	Momentary/Maintained		Momentary/Maintained		Momentary/Maintained	
Shape						
Model	ABN2F AON2F	ABFD2 AOFD2	ABN3 AON3	ABD3 AOD3	ABN3G —	ABGD3 AOGD3
Page	14	30	15	31	15	31

Function	Pushbutton					
Category	Jumbo Mushroom		Jumbo Mushroom with Shallow Shroud		Jumbo Mushroom with Deep Shroud	
	Momentary		Momentary		Momentary	
Shape						
Model	ABN4	ABD4	ABN4G	ABGD4	ABN4F	ABFD4
Page	15	31	15	31	15	31

Function	Pushbutton					
Category	Mushroom Pushlock Turn Reset (*1)		Mushroom Push Turn Lock		Mushroom Pull	
	Momentary		Momentary		Momentary	
Shape						
Model	AVN3	AVD3	AJN3	AJD3	AZN3	AZD3
Page	16	32	16	32	16	32

Function	Pushbutton			
Category	Mushroom Push-Pull		Pin Lock	
	Momentary		Momentary	
Shape	—		—	
Model	—	AYD3	—	ABD8P
Page	—	32	—	31

*1) Cannot be used as emergency stop switch based on ISO 13850 and IEC 60947-5-5.

Function	LED Illuminated Pushbutton					
Category	Extended		Extended with Half Shroud		Extended with Full Shroud	
	Momentary/Maintained		Momentary/Maintained		Momentary/Maintained	
Shape		Diecast Zinc 		—		Diecast Zinc 
Model	ALN2 AOLN2	ALD2 AOLD2	ALGN2 AOLGN2	—	ALFN2 AOLFN2	ALFD2 AOLFD2
Page	17	33	17		17	33

Function	LED Illuminated Pushbutton					
Category	Mushroom		Mushroom Pushlock Turn Reset (*1)		Mushroom Push Turn Lock	
	Momentary/Maintained					
Shape		Diecast Zinc 		Diecast Zinc 		—
Model	ALN3 AOLN3	ALD3 AOLD3	AVLN3	AVLD3	AJLN3	—
Page	18	34	18	34	18	

Function	Selector Switches					
Category	Knob		Lever		Key	
	Diecast Zinc		Diecast Zinc		Diecast Zinc	
Shape						
Model	ASN	ASD	ASN□L	ASD□L	ASN□K	ASD□K
Page	20	35	21	36	22	37

Function	Selector Switch			Selector Pushbutton	
Category	Key	LED Illuminated Knob		Ring Operator	
		Diecast Zinc			Diecast Zinc
Shape					
Model	ASN□K-N024401	ASLN	ASLD	ASBN2	ASBD2
Page	23	24	38	27	39

Function	LED Illuminated Pilot Light			
Category	Dome		Square Extended (IP40)	Rectangular (Marking) (IP40)
	Diecast Zinc			
Shape				
Model	APN1	APD1	UPQN3B	UPQN4
Page	28	40	28	28

*1) Cannot be used as emergency stop switch based on ISO 13850 and IEC 60947-5-5.

Selection Guide

Ratings/ Specifications

LED Ratings

Specifications

Degree of Protection

Ordering

Part No. Development

TWN Series

TWND Series
Diecast Zinc

Accessories

Instructions

Part No. Comparison

Heavy duty switches & pilot lights offer both variety and reliability.
Endures harsh environments.

Equipped with HW-U contact blocks featuring finger-safe (IP20) structure and spring-up terminals.



Applicable Standards	Mark	File No. or Organization
UL508		UL Listing File No.E68961
CSA C22.2 No.14		CSA File No. LR 21451
EN60947-5-1		TÜV Rheinland
EN60947-5-1		EU Low Voltage Directive and RoHS2 Directive (except for DC-DC converter unit)
GB14048.5		Contact IDEC for details.

- Pilot light is not approved by EN standards.
- DC-DC converter unit is not approved by standards.

Ratings and Specifications

Contact ratings

Pushbuttons	Rated insulation voltage	600V
Illuminated Pushbuttons	Rated continuous current	10A
Selector Switches	Contact ratings by utilization category	AC-15 (A600)
Illuminated Selector Switches	JIS C8201-5-1	DC-13
Selector Pushbuttons	IEC60947-5-1	

Contact ratings by utilization category

HW-U10 (NO contact), HW-U01 (NC contact)

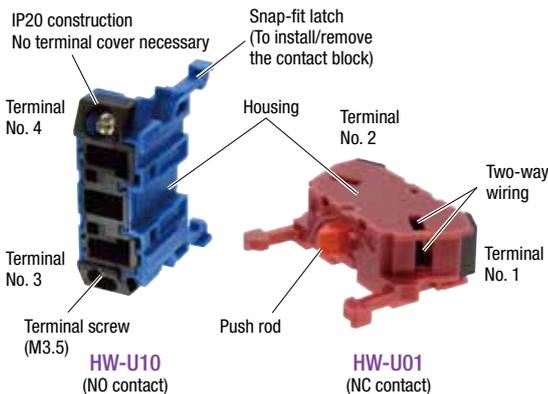
Operating Voltage		24V	48V	50V	110V	220V	440V
Operating Current	AC 50/60 Hz	AC-12 Control of resistive loads and solid state loads	10A	–	10A	10A	6A
		AC-15 Control of electromagnetic loads (> 72 VA)	10A	–	7A	5A	3A
	DC	DC-12 Control of resistive loads and solid state loads	10A	5A	–	2.2A	1.1A
		DC-13 Control of electromagnets	5A	2A	–	1.1A	0.6A

HW-U10R (EM contact/NO contact), HW-U01R (LB contact/NC contact)

Operating Voltage		24V	48V	50V	110V	220V	440V
Operating Current	AC 50/60 Hz	AC-12 Control of resistive loads and solid state loads	5A	–	5A	5A	3A
		AC-15 Control of electromagnetic loads (> 72 VA)	5A	–	3.5A	2.5A	1.5A
	DC	DC-12 Control of resistive loads and solid state loads	5A	2.5A	–	1.1A	0.55A
		DC-13 Control of electromagnets	2.5A	1A	–	0.55A	0.3A

- The operating current represents the classification by making and breaking currents (IEC 60947-5-1).
- Silver contacts
- Minimum applicable load: 3V AC/DC, 5 mA (applicable range may vary with operating conditions and load types)
- For mono-lever switches and cam switches, see the brochures of each product.

HW-U Contact Block



Part No.	HW-U10	HW-U01	HW-U10R	HW-U01R
Contact				
Terminal No.	3-4	1-2	3-4	1-2
Housing color	Blue	Reddish purple	Blue	Reddish purple
Push Rod color	Green	Red	Black	White
Weight	Approx. 11g			

- Up to 4 contacts in two decks can be mounted onto each operator. (AZN, AZD, AYD: Up to 2 contact blocks in one deck)
- Cannot be used on operators in dark gray or light gray color.
- Gold contact available (gold-plated silver)

LED Illuminated Unit Ratings

Unit	Color	Rated Voltage		Operating Voltage		LED lamp			
						Lamp Base	Part No.		
Illuminated pushbutton Illuminated selector switch Pilot light	R (red) G (green) Y (yellow) A (amber) W (white) S (blue) PW (pure white)	6V AC/DC		6V AC/DC		BA9S/13	LSTD-6*		
		12V AC/DC		12V AC/DC			LSTD-1*		
		24V AC/DC		24V AC/DC			LSTD-2*		
		50/60 Hz	100/110V AC		100/110V AC		±10%	LSTD-6*	
			115/120V AC (*1)		115/120V AC (*1)				
			120V AC (*2)		120V AC (*2)				
			200/220V AC		200/220V AC				
			230/240V AC (*1)		230/240V AC (*1)				
			240V AC (*2)		240V AC (*2)				
			380V AC		380V AC				
		400/440V AC		400/440V AC					
		480V AC		480V AC					
		110V DC		90 to 140V DC					

- See LED lamps, see LED Lamp Ratings below.
- Specify a color code in place of *.
R (red), G (green), A (amber), W (white), S (blue), PW (pure white)
- Use a pure white (PW) LED for yellow (Y) illumination.
- Note the polarity for wiring when connecting to DC-DC converter unit.
- Color codes for units without LED lamps:
R (red), G (green), A (amber), Y (yellow), W (white), S (blue)
When using a commercially available lamp, choose a lamp with rated voltage 5 to 30V AC/DC and 1W maximum, and with the same base and shape.
Make sure of correct operation before installation. The operation of TWN/TWND series cannot be guaranteed when a commercially available lamp is used.
- *1) Illuminated pushbutton, illuminated selector switch
- *2) Pilot light

- Selection Guide
- Ratings/ Specifications
- LED Ratings
- Specifications
- Degree of Protection
- Ordering
- Part No. Development

Power Unit Terminal

Power Unit	Illuminated Unit				Pilot Light		
	Full voltage adapter	Transformer		DC-DC converter	Full voltage adapter (unibody)	Transformer	DC-DC converter
Rated Voltage	6V, 12V, 24V AC/DC	100 to 240V AC	380V AC min.	110V DC	6V, 12V, 24V AC/DC	100 to 480V AC	110V DC
Polarity	None	None	None	X1 (+) X2 (-)	None	None	X1 (+) X2 (-)
Shape/Terminal							

- TWN Series
- TWND Series Diecast Zinc

LED Lamp Ratings (LSTD)

Part No.	LSTD-6*		LSTD-1*		LSTD-2*	
Lamp Base	BA9S/13					
Rated Voltage	6V AC/DC		12V AC/DC		24V AC/DC	
Voltage Range	6V AC/DC ±10%		12V AC/DC ±10%		24V AC/DC ±10%	
Current Draw	Color	R, A, W	G, S, PW	R, G, A, W, S, PW		R, G, A, W, S, PW
	DC	7mA	5.5mA	10mA		10mA
	AC	8mA	8mA	11mA		11mA
Lamp Base Color	Same as illumination color (PW: gray)					
Voltage Marking	Die stamped on the base					
Life (reference value)	Approx. 50,000 hours (The luminance is reduced to 50% the initial intensity when used on complete DC at 25°C.)					
Internal Circuit						
Weight	Approx. 2g					

- Specify a color code in place of *.
R (red), G (green), A (amber), W (white), S (blue), PW (pure white)
- Use a pure white (PW) LED for yellow (Y) illumination.

- Accessories
- Instructions
- Part No. Comparison

Specifications

Operating Temperature		Non-illuminated: -25 to +70°C (no freezing) Illuminated: -25 to +50°C (no freezing)	
Storage Temperature		-40 to +80°C (no freezing)	
Operating Humidity		45 to 85% RH (no condensation)	
Contact Resistance		50 mΩ maximum (initial value)	
Insulation Resistance		100 MΩ minimum (500V DC megger)	
Dielectric Strength		Between live and dead metal parts: 2,500V AC, 1 minute (Full voltage and pilot lights: 2,000V AC, 1 minute) 2000V AC, (pilot lights: 6V AC/DC, 12V, 24V)	
Vibration Resistance	Damage limits	30 Hz, amplitude 1.5 mm	
	Operation extremes	5 to 55 Hz, amplitude 0.5 mm	
Shock Resistance	Damage limits	1000 m/s ²	
	Operation extremes	100 m/s ²	
Mechanical Life (minimum operations)	Pushbutton	Momentary	5,000,000
		Maintained	500,000 (over 3 contacts: 250,000)
		Push lock turn reset	500,000
		Pull	500,000
	Illuminated pushbutton	Momentary	2,500,000
		Maintained	500,000 (over 3 contacts: 250,000)
	Selector switch		500,000
	Key selector switch		500,000
Illuminated selector switch		500,000	
Selector pushbutton		250,000	
Electrical Life (minimum operations) (*1)	Pushbutton	Momentary	500,000 Switching frequency 1800 operations/h, duty ratio 40%
		Maintained	500,000 (over 3 contacts: 250,000) Switching frequency 900 operations/h, duty ratio 40%
		Push lock turn reset	500,000 Switching frequency 900 operations/h, duty ratio 40%
	Illuminated pushbutton	Momentary	500,000 Switching frequency 1800 operations/h, duty ratio 40%
		Maintained	500,000 (over 3 contacts: 250,000) Switching frequency 900 operations/h, duty ratio 40%
	Selector switch		500,000 Switching frequency 1200 operations/h, duty ratio 40%
	Key selector switch		500,000 Switching frequency 1200 operations/h, duty ratio 40%
	Illuminated selector switch		500,000 Switching frequency 1200 operations/h, duty ratio 40%
Selector pushbutton		250,000 Switching frequency 900 operations/h, duty ratio 40%	
Weight (approx.)	TWN series	Pushbutton	ABN122: 82g ABN322: 87g
		Illuminated pushbutton	ALN22222DN: 106g ALN21622DN: 163g
		Selector switch	ASN222N: 83g ASN2K22N: 120g
		Illuminated selector switch	ASLN22222DN: 106g ASLN21622DN: 163g
		Pilot light	APN122DN: 46g APN116DN: 125g
	TWND series	Pushbutton	ABD122: 108g ABD322: 113g
		Illuminated pushbutton	ALD22222DN: 132g ALD21622DN: 189g
		Selector switch	ASD222N: 110g ASD2K22N: 147g
		Illuminated selector switch	ASLD22222DN: 133g ASLD21622DN: 190g
		Pilot light	APD122DN: 75g APD116DN: 152g

*1) Load condition 220V AC 3A (AC-15)

Degree of Protection

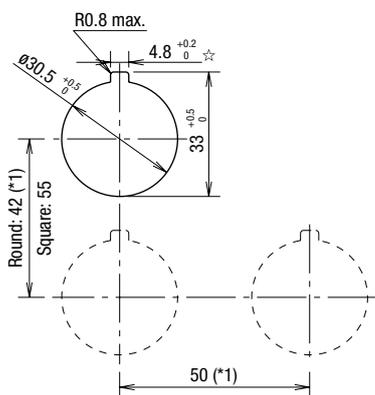
Series	Unit	Model	IEC 60529	JIS C 0920
TWN series	Pushbutton	ABN, AON, AVN	IP65	Dust-proof/jet-proof
	Illuminated pushbutton	ALN, AOLN, AVLN		
	Selector switch	ASN, ASN□L		
	Key selector switch	ASN□K		
	Illuminated selector switch	ASLN		
	Selector pushbutton	ASBN		
	Round pilot light	APN		
TWND series Diecast zinc	Square pilot light	UPQN	IP40	—
	Pushbutton	ABD, AOD, AVD	IP65	Dustproof/jet-proof
	Illuminated pushbutton	ALD, AOLD, AVLD		
	Selector switch	ASD, ASD□L		
	Key selector switch	ASD□K		
	Illuminated selector switch	ASLD		
	Selector pushbutton	ASBD		
Round pilot light	APD			

• Switches/pilot lights have been tested in a test room in accordance with the degree of protection standards, by installing on an enclosure to evaluate the effect on the enclosure or inside the switch or pilot light.

For harsh environment such as torrid/frigid area

TWN/TWND series for harsh environment such as tropical/frigid area is also available (not approved by standards). Contact IDEC for details.

Mounting Hole Layout/Mounting Centers



All dimensions in mm.

- The minimum mounting centers are applicable to pilot lights with one layer of contact blocks (one to two contact blocks). When two layers of contact blocks (four contact blocks) are mounted, determine the minimum mounting centers in consideration of convenience for wiring.

- *1) Mushroom with shroud: 50 mm minimum
- *1) Jumbo mushroom: 67 mm minimum
- *1) Jumbo mushroom with shroud: 77 mm minimum

- The 4.8 mm^{+0.2} recess is for preventing rotation and is not necessary when the nameplate or anti-rotation ring is not used.

Note: For mounting hole layout of mono-lever switches and cam switches, see IDEC's website.

Notes for Ordering

Standard models

- Specify Ordering No. when ordering.
- Specify a color code in place of *
- Pilot lights, illuminated pushbuttons, and illuminated selector switches have an LED lamp installed.
- Pilot lights are equipped with a terminal cover.
- Color codes for units without LED lamps:
R (red), G (green), A (amber), Y (yellow), W (white), S (blue)
- When using a commercially available lamp, choose a lamp with rated voltage 5 to 30V AC/DC and 1W maximum, and with the same base and shape. Make sure of correct operation before installation. The operation of TWN/TWND series cannot be guaranteed when a commercially available lamp is used.
- Terminal covers, nameplates, and accessories for mono-lever switch and cam switch are ordered separately.
- For terminal cover, nameplate and other accessories of mono-lever switches and cam switches, see IDEC's website.

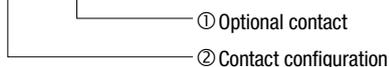
Ordering Information

Pushbutton

When specifying gold-plated silver contact and contact configuration:

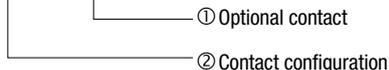
TWN series (Page 14 to 16)

ABN 2 11 R - MAU



TWND series (Page 30 to 32)

ABD 2 11 NR - MAU



<Codes>

① Optional contact
MAU: Gold-plated silver

② Contact configuration
10: 1NO
01: 1NC
11: 1NO1NC
20: 2NO
02: 2NC
22: 2NO2NC
40: 4NO
04: 4NC
13: 1NO3NC
31: 3NO1NC
30: 3NO
03: 3NC
12: 1NO2NC
21: 2NO1NC

Note:

- Pushbutton with one or three contact blocks contains a dummy block.
- Mushroom pull pushbuttons AZN, AZD and mushroom push-pull AYD have up to two contacts in one layer.

Selection Guide

Ratings/ Specifications

LED Ratings

Specifications

Degree of Protection

Ordering

Part No. Development

TWN Series

TWND Series Diecast Zinc

Accessories

Instructions

Part No. Comparison

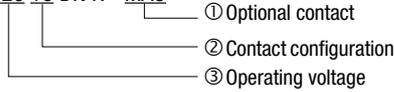
Ordering Information

Illuminated Pushbutton

When specifying gold-plated silver contact, contact configuration, and LED operating voltage:

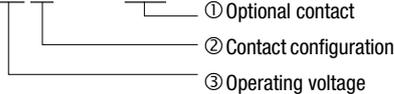
TWN series (Page 17 to 19)

ALFN 2 126 13 DN R - MAU



TWND series (Page 33 to 34)

ALFD 2 126 13 DN R - MAU



<Codes>

- ① Optional contact
MAU: Gold-plated silver
- ② Contact configuration
10: 1NO
01: 1NC
11: 1NO1NC
20: 2NO
02: 2NC
31: 3NO1NC
22: 2NO2NC
13: 1NO3NC
40: 4NO
04: 4NC
- ③ Operating voltage
99: Without LED lamp
66: 6V AC/DC
11: 12V AC/DC
22: 24V AC/DC
16: 100/110V AC
126: 115/120V AC
26: 200/220V AC
246: 230/240V AC
386: 380V AC
46: 400/440V AC
486: 480V AC

Note:

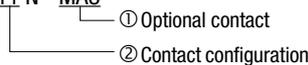
- Odd number of contact blocks, such as 1NO, 1NC, 3NO, 2NO-1NC, 1NO-2NC, and 3NC, are not available for models of 100V AC or over.
- Illuminated pushbuttons of 24V AC/DC and below with two or four contact blocks contain a dummy block.
- See page 13 for how to specify 110V DC model (DC-DC converter).
- Color codes for units without LED lamps:
R (red), G (green), A (amber), Y (yellow), W (white), S (blue)
- When using a commercially available lamp, choose a lamp with rated voltage 5 to 30V AC/DC and 1W maximum, and with the same base and shape.

Selector Switch

When specifying gold-plated silver contact and contact configuration:

TWN series (Page 20 to 23)

ASN 2 11 N - MAU



TWND series (Page 35 to 37)

ASD 2 11 N - MAU



<Codes>

- ① Optional contact
MAU: Gold-plated silver

Key removable position code (example)

Position	Key removable position	Key removable position code	Part No. Example			
			TWN series	Example	TWND series	
2-position	Maintained	Removable in all positions	(blank)	ASN2K20N	ASN2K20N-N024401	ASD2K20N
		Removal in left only	B	ASN2K20NB	ASN2K20NB-N024401	ASD2K20NB
		Removable in right only	C	ASN2K20NC	ASN2K20NC-N024401	ASD2K20NC
	Spring return from right	Removal in left only	(blank)	ASN21K20N	ASN21K20N-N024401	ASD21K20N
	Spring return from left	Removable in right only	(blank)	ASN22K20N	ASN22K20N-N024401	ASD22K20N
3-position	Maintained	Removable in all positions	(blank)	ASN3K20N	ASN3K20N-N024401	ASD3K20N
		Removable in left and center	B	ASN3K20NB	ASN3K20NB-N024401	ASD3K20NB
		Removable in right and center	C	ASN3K20NC	ASN3K20NC-N024401	ASD3K20NC
		Removable in center only	D	ASN3K20ND	ASN3K20ND-N024401	ASD3K20ND
		Removable in right and left	E	ASN3K20NE	ASN3K20NE-N024401	ASD3K20NE
		Removal in left only	G	ASN3K20NG	ASN3K20NG-N024401	ASD3K20NG
		Removable in right only	H	ASN3K20NH	ASN3K20NH-N024401	ASD3K20NH
	Spring return from right	Removable in left and center	(blank)	ASN31K20N	ASN31K20N-N024401	ASD31K20N
		Removable in center only	D	ASN31K20ND	ASN31K20ND-N024401	ASD31K20ND
		Removal in left only	G	ASN31K20NG	ASN31K20NG-N024401	ASD31K20NG
	Spring return from left	Removable in right and center	(blank)	ASN32K20N	ASN32K20N-N024401	ASD32K20N
		Removable in center only	D	ASN32K20ND	ASN32K20ND-N024401	ASD32K20ND
		Removable in right only	H	ASN32K20NH	ASN32K20NH-N024401	ASD32K20NH
	Spring return two-way	Removable in center only	(blank)	ASN33K20N	ASN33K20N-N024401	ASD33K20N

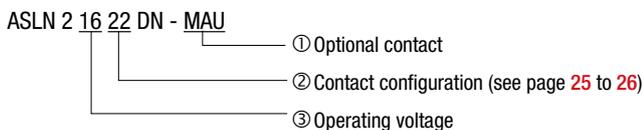
- The key cannot be removed in spring return positions.

Ordering Information

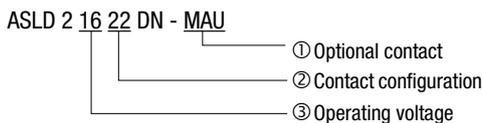
Illuminated Selector Switch

When specifying gold-plated silver contact, contact configuration, and LED operating voltage:

TWN series (Page 24)



TWND series (Page 38)



- <Codes>
- ① Optional contact
MAU: Gold-plated silver
 - ③ Operating voltage
99: Without LED lamp
66: 6V AC/DC
11: 12V AC/DC
22: 24V AC/DC
16: 100/110V AC
136: 115/120V AC
26: 200/220V AC
256: 230/240V AC
386: 380V AC
46: 400/440V AC
486: 480V AC

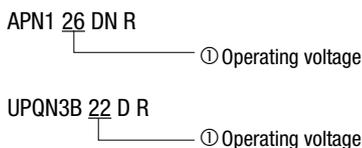
Note:

- Odd number of contact blocks, such as 1NO, 1NC, 3NO, 2NO-1NC, 1NO-2NC, and 3NC, is not available for models of 100V AC or over.
 - Illuminated selector switches of 24V AC/DC and below with two or four contact blocks contain a dummy block.
 - See below for how to specify 110V DC model (DC-DC converter).
 - Color codes for units without LED lamps: R (red), G (green), A (amber), Y (yellow), W (white), S (blue)
- When using a commercially available lamp, choose a lamp with rated voltage 5 to 30V AC/DC and 1W maximum, and with the same base and shape.

Pilot Light (LED)

When specifying LED operating voltage:

TWN series (Page 28 to 29)



TWND series (Page 40)



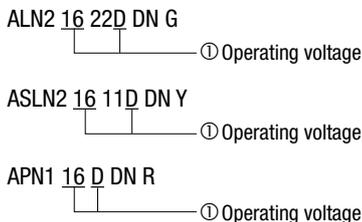
- <Codes>
- ① Operating voltage
99: Without LED lamp
66: 6V AC/DC
11: 12V AC/DC
22: 24V AC/DC
16: 100/110V AC
126: 115/120V AC
26: 200/220V AC
246: 230/240V AC
386: 380V AC
46: 400/440V AC
486: 480V AC

- See below for how to specify 110V DC model (DC-DC converter).
 - Color codes for units without LED lamps: R (red), G (green), A (amber), Y (yellow), W (white), S (blue)
- When using a commercially available lamp, choose a lamp with rated voltage 5 to 30V AC/DC and 1W maximum, and with the same base and shape.

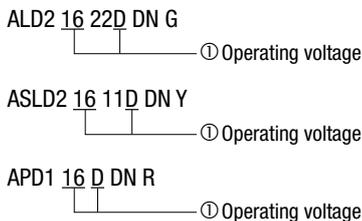
DC-DC Converter Model (110V DC)

When specifying DC-DC convertor type on illuminated pushbuttons, illuminated selector switches, and pilot lights:

TWN series



TWND series



- <Codes>
- ① Operating voltage
16 D: 110V DC

- See 110V DC model (DC-DC converter) is not approved by standards (operating voltage: 90 to 140V DC).
- Odd number of contact blocks, such as 1NO, 1NC, 3NO, 2NO-1NC, 1NO-2NC, and 3NC, is not available for 100V DC model (DC-DC converter).

Selection Guide
Ratings/ Specifications
LED Ratings
Specifications
Degree of Protection
Ordering
Part No. Development

TWN Series
TWND Series Diecast Zinc

Accessories
Instructions
Part No. Comparison