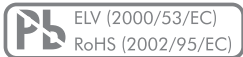


Incremental Encoders Type E20 & E27

- 16 or 32 detents standard resolution
- With or without integrated push button
- Rotational life: 100,000 revolutions
- 0.5, 1.5 or 2.5 Ncm switching torque
- Gold plated contacts
- Optional IP67 front panel sealing
- Operating temperature range: -40 to +85°C
- Various options and customization



Standard Product Variety

- Vertical or horizontal mounting
- THT or SMT reflow (vacuum pick & place)
- Threaded or non-threaded bushing
- 3 or 6 N push button force or without push button
- 16/8 or 30/15 detents/pulses per revolution (PPR)
- 0.5, 1.5 or 2.5 Ncm switching torque or no detents
- IP50 or IP67 front panel sealing
- Shaft mounted, separated or without shaft
- With or without shaft insulation
- With or without nut
- Various standard shafts available
- Tray or tape & reel packaging

Typical Applications

- Value and menu control for industrial PLCs
- Avionics, instrumentation, test equipment
- Frequency and channel selection for two way radios
- User interface controls for medical devices
- Volume and menu setting for transportation control and entertainment systems

Preference Types Selection Chart¹

Type E20 (SMT)

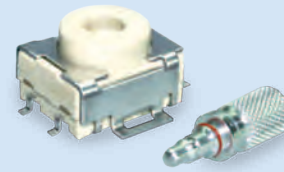
Torque	Push Button	30 Detents	16 Detents
1.5 Ncm	Yes, 6 N	E20-0-51141AL032	E20-1-51141AL032
	Yes, 3 N	E20-0-52141AL032	E20-1-52141AL032
	No	E20-0-50141AL032	E20-1-50141AL032

Type E27 (THT)

Orientation	Torque	Bushing	Push Button	30 Detents	16 Detents
Vertical	1.5 Ncm	Threaded	Yes, 6 N	E27-0-21151AL011	E27-1-21151AL011
			No	E27-0-20151AL011	E27-1-20151AL011
		Non-threaded	Yes, 6 N	E27-0-21101AL001	E27-1-21101AL001
			No	E27-0-20101AL001	E27-1-20101AL001
	2.5 Ncm	Threaded	Yes, 6 N	E27-0-21251AL011	E27-1-21251AL011
			No	E27-0-20251AL011	E27-1-20251AL011

¹ For other types/options, see type key.

Type E20 (SMT)



Type E27 (THT)



Examples of Customization



Examples of Customization

- Metal housing with M6 x 0.35 thread
- Shaft dimensions and shape

Incremental Encoders Type E20 & E27

Specifications

Encoder

Mechanical Data

Resolution:	30 or 16 detents
Switching torque (new condition):	0.5, 1.5 or 2.5 Ncm (+/- 50%)
Rotational life:	100,000 revolutions min. with 0.5 or 1.5 Ncm 75,000 revolutions min. with 2.5 Ncm
Shaft strength:	50 N min. pull
Fastening torque of nut:	25 Ncm max.

Electrical Data

Coding/output:	2-bit quadrature
Resolution:	15 or 8 pulses per revolution (PPR) per channel
Operating speed:	60 RPM max.
Contact bouncing time:	2 ms max.
Contact resistance:	10 Ohms max. (over the entire rotational life)
Dielectric withstanding voltage to shaft:	2 kV (optional with push button)

Material Data

Shaft:	Aluminum
Housing:	Fiber enforced plastic
Nut:	Brass
Contact system:	Alloy copper, AuCo plated (hard gold)
Soldering leads:	Alloy copper, tin plated
Housing clamp, retention clips:	Tin-plate

Environmental Data

Operating temperature range:	-40 to +85°C
Storage temperature range:	-55 to +90°C
IP sealing:	IP50, optional IP67 shaft/front panel sealing
Vibration:	50 Grms max. @ 10 to 500 Hz
Flammability:	UL94-V0

Packaging Sizes

Tray:	80 pcs.
Tape & reel (E20 only):	300 pcs.

Additional Data for Push Button Switch

Mechanical Data

Push button actuation force (new condition):	6 N (+/- 50%), optional 3 N (+/- 50%)
Push button switch travel:	0.5 (+0.4/-0.3) mm
Push button switch life:	100,000 actuations min.

Electrical Data

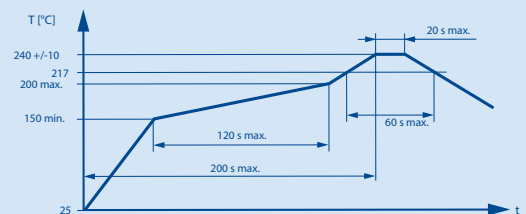
Contact bouncing time:	2 ms max.
Contact resistance:	10 Ohms max. (over the entire rotational life)

Soldering Conditions

Hand soldering:	340°C max. during 2 s max.
Wave soldering:	280°C max. peak temperature during 5 s max.

Temperatures or process duration exceeding rated maximum conditions may harm encoder function.

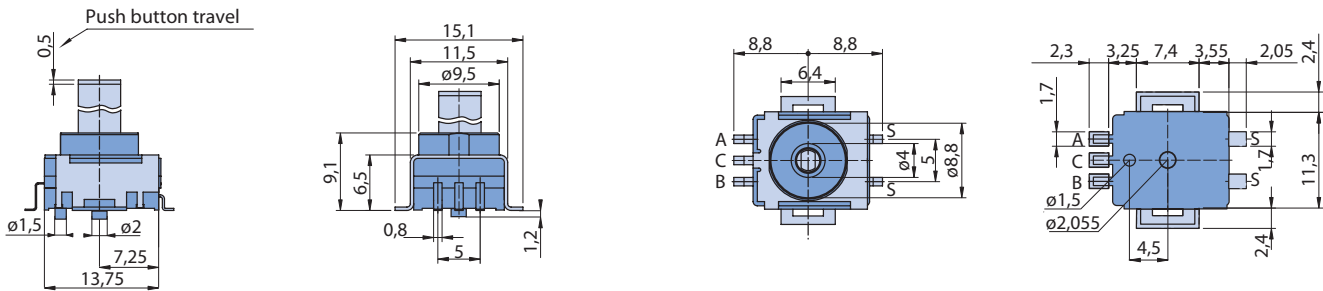
Reflow Profile (complies to IPC/JEDEC J-STD-020C)



Incremental Encoders Type E20 & E27

Drawings

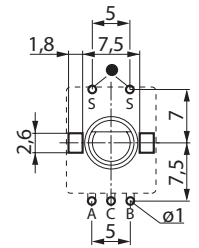
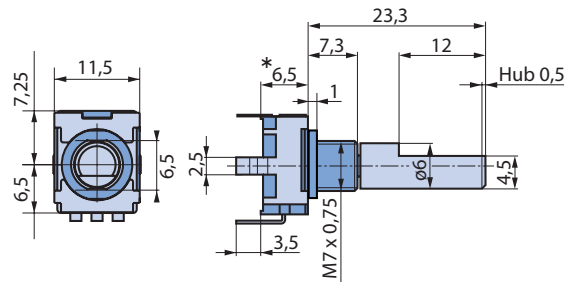
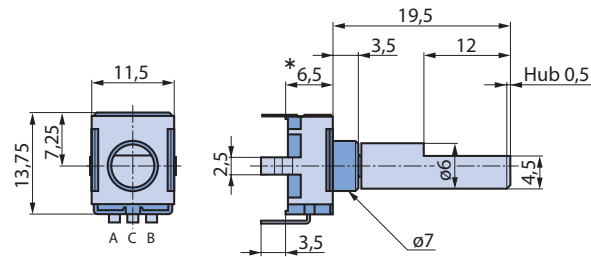
Type E20 (SMT)



Type E27 (THT)

Vertical, Non-Threaded Bushing

Vertical, Threaded Bushing

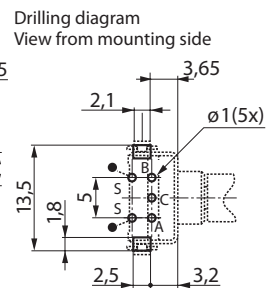
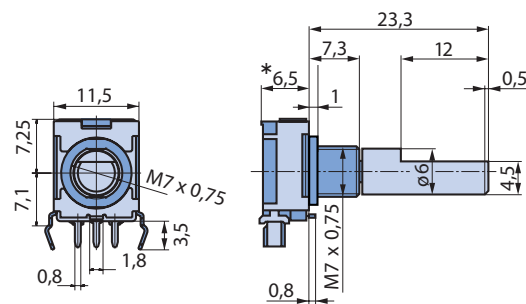
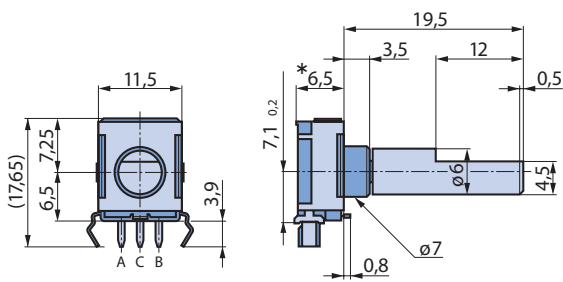


* Applicable only on the version with integrated push button function. Height of switch housing is reduced to 5,3 mm from 6,5 mm for the version without integrated push button function.

● Applicable only with integrated push button function.

Horizontal, Non-Threaded Bushing

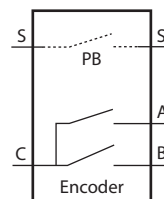
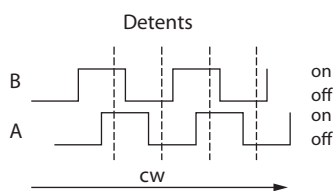
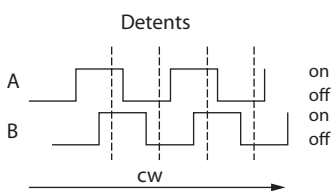
Horizontal, Threaded Bushing



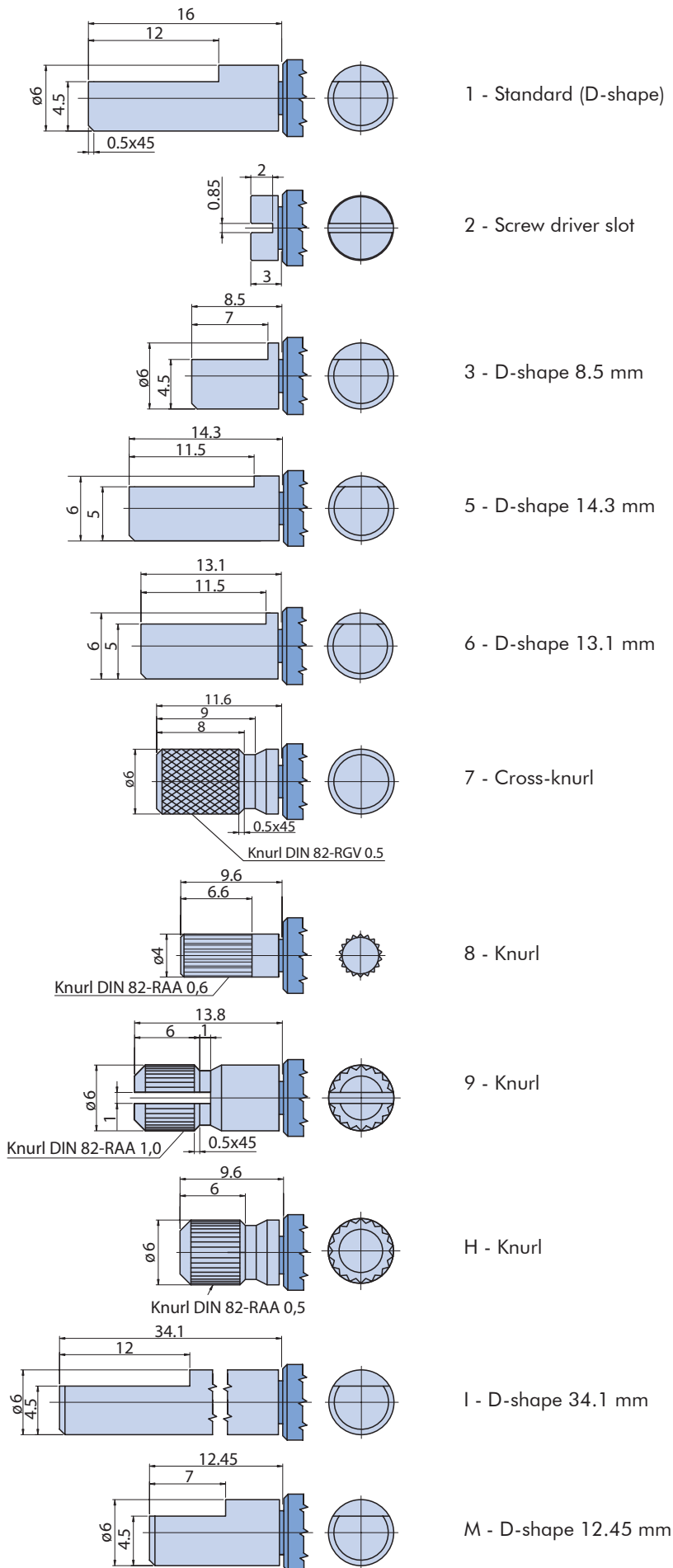
Signal Output

30 Detents (15 PPR)

16 Detents (8 PPR)



Shaft Drawings



Incremental Encoders Type E20 & E27

Type Key

E 2 0 (E27) - X - X X X X X XX X X X

Resolution
 0 - 30 detents (15 PPR)
 1 - 16 detents (8 PPR)

Orientation/Mounting
 1 - THT horizontal
 2 - THT vertical
 5 - SMT vertical

Push Button
 0 - Without push button
 1 - 6 N
 2 - 3 N

Torque
 0 - No detents
 1 - 1.5 Ncm
 2 - 2.5 Ncm
 3 - 0.5 Ncm

Bushing Style
 0 - THT, non-threaded
 Ø 7 mm x 3.5 mm
 4 - SMT, non-threaded
 Ø 9 mm x 2.6 mm
 5 - THT, threaded
 M7 x 0.75 x 7.3 mm












Packaging
 1 - Tray (THT or SMT, 80 pcs.)
 2 - Tape & reel (SMT only,
 300 pcs., shaft separated)

Nut, Washer, Shaft
 0 - Without nut and washer
 1 - With nut
 2 - With nut and washer
 3 - Shaft separated
 4 - Shaft separated, with nut
 5 - Shaft separated, with nut
 and washer

IP Sealing
 0 - IP50
 1 - IP67 shaft sealing (O-ring)
 2 - IP67 front panel sealing (gasket)
 3 - IP67 shaft/front panel sealing

Shaft, Shaft Insulation
 00 - Without shaft
 AL - Aluminum
 AE - Aluminum, 2 kV shaft
 insulation (only applicable with
 push button)

Shaft Type

		For bushing style		
		0	4	5
0 -	Without shaft	X	X	X
1 -	 D-shape 16 mm¹	X	X	X
2 -	 Screw driver slot	X		
3 -	 D-shape 8.5 mm	X		X
5 -	 D-shape 14.3 mm	X		
6 -	 D-shape 13.1 mm	X		X
7 -	 Cross-knurl	X		X
8 -	 Knurl	X		
9 -	 Parallel-knurl	X	X	X
H -	 Knurl	X		
I -	 D-shape 34.1 mm	X		
M -	 D-shape 12.45 mm	X		

¹Basic type