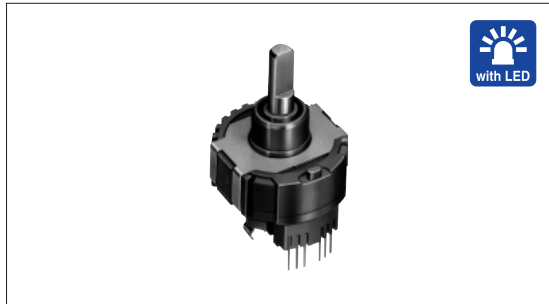


Encoder 20mm Size Metal Shaft Magnetic Type

EM20B Series



Highly reliable non-contact structure applicable to 31-point LED level indicator mounting.



Typical Specifications

Items	Specifications
Rating	5V±5% DC
Operating life	500,000rotations
Operating temperature range	-10°C to +70°C

Product Line

Actuator length (mm)	Torque (mN·m)		Number of detent	Number of pulse	Operating direction	Push switch (N)	Display function	Response time	Minimum order unit (pcs.)	Product No.	Drawing No.	
	Rotational torque	Detent torque										
15.5	7 max.	—	Without	40	Vertical	Without	Without	1.3 μ sec. (TYP)	480	EM20B4000000	1	
16	—	8±5	40							EM20B4010000		
10	—	8±5	40			With (Switch operating force 6±3)				With (Color : orange)	EM20B4014000	2
						EM20B4014A01				3		

Packing Specifications

Tray

Number of packages (pcs.)		Export package measurements (mm)
1 case /Japan	1 case /export packing	
480	960	378×527×262

Notes

1. This product uses a Hall IC. Be aware of ESD damages.
2. Custom design for shaft configuration are available upon request.
3. Please place purchase orders per minimum order unit N (integer).


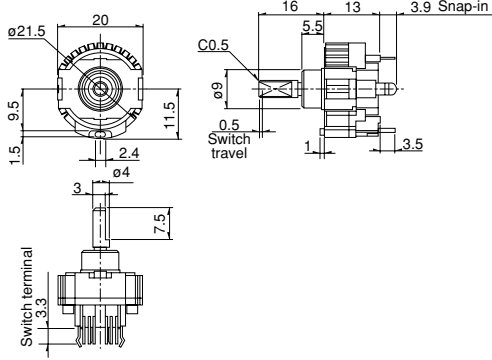
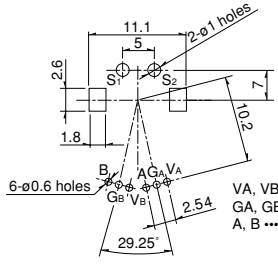
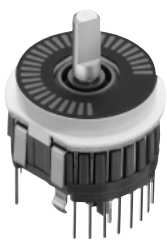
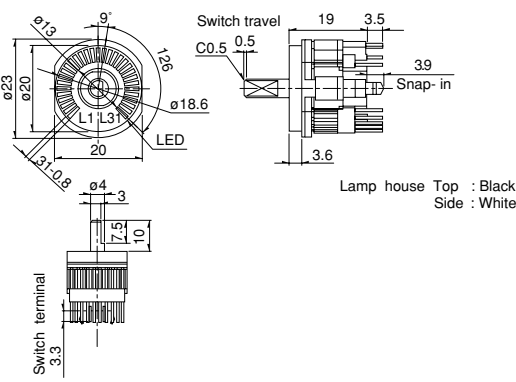
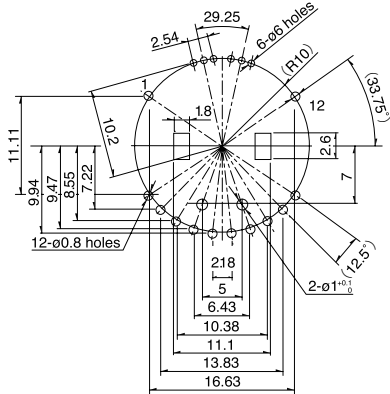
Dimensions

Unit:mm

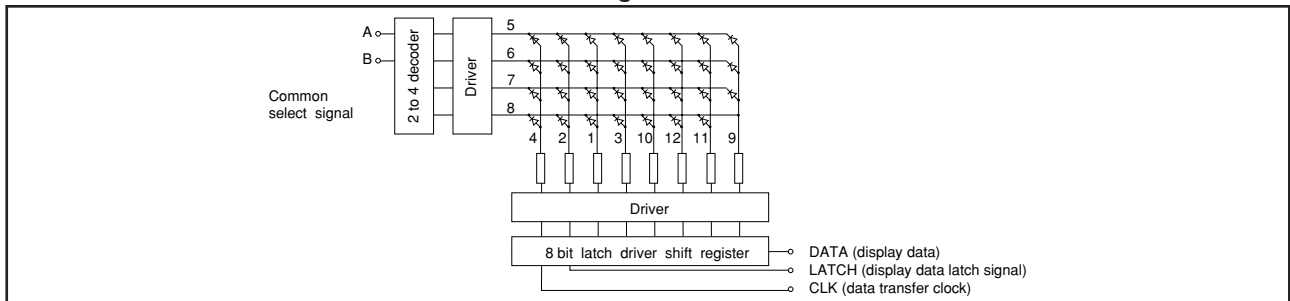
No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
1			

Dimensions




Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
2	 <p>With push-on switch (travel 0.5mm)</p>	 <p>Technical drawings showing top, side, and bottom views of the encoder with a push-on switch. Dimensions include: top diameter 20mm, shaft diameter 21.5mm, mounting hole diameter 11.5mm, and switch travel 0.5mm. A snap-in feature is shown with a 3.9mm depth.</p>	 <p>PC board mounting hole dimensions (Viewed from mounting side). Dimensions include: 6-ø0.6 holes, 2-ø1 holes, 11.1mm, 5mm, 7mm, 10.2mm, 1.8mm, 2.6mm, 2.54mm, and 29.25mm. Legend: VA, VB ... Power supply; GA, GB ... Ground; A, B Out put.</p>
3	 <p>With LED With push-on switch (travel 0.5mm)</p>	 <p>Technical drawings showing top, side, and bottom views of the encoder with an LED and a push-on switch. Dimensions include: top diameter 20mm, shaft diameter 23mm, mounting hole diameter 18.6mm, and LED diameter 13.6mm. A snap-in feature is shown with a 3.9mm depth. Lamp house Top: Black, Side: White.</p>	 <p>PC board mounting hole dimensions (Viewed from mounting side). Dimensions include: 12-ø0.8 holes, 2-ø1 (12.5) holes, 11.11mm, 9.94mm, 9.47mm, 8.55mm, 7.22mm, 10.2mm, 1.8mm, 2.6mm, 7mm, 2.54mm, 29.25mm, 6-ø0.6 holes, 218mm, 5mm, 6.43mm, 10.38mm, 11.1mm, 13.83mm, and 16.63mm.</p>

LED Unit Recommended Drive Circuit Block Diagram



List of Varieties

Type	Hollow shaft		Magnetic	
	5mm size	10mm size	20mm size	
Series	EC05E	EC10E	EM20B	
Photo				
Output	Incremental			
Outline specifications	Shaft types	Hollow shaft		Single-shaft
	Operating direction	Vertical/Horizontal	Horizontal	Vertical
	Number of pulse/ Number of detent	12/12	12/24	40/40
	Push switch (Travel mm)	Without		Without/With(0.5)
	Optional functions	_____		Display function
	Changeover angle	_____		
Dimensions (mm)	W	5.7	9.8	20
	D	2.7	4.4	22.25
	H	7.3	12.6	13
Soldering	Manual soldering	350°C max. 3s max.		
	Dip soldering	—	260±5°C, 3±1s	260°C max. 3s max.
Operating temperature range	Please see P.226			
Maximum operating current (Resistive load)	-30°C to +85°C		-10°C to +70°C	
Electrical performance	Output signal	0.55mA	1mA	—
	Output phase	Output of A and B signals, proportionate to phase difference		V _{HI} : +4.0V min. V _{LO} : 0.5V max. (I _{sink} =5mA)
	Sliding noise	_____		A,B (Square wave)
	Insulation resistance	50MΩ min. 50V DC		100MΩ min. 250V DC
	Voltage proof	50V AC for 1minute		300V AC for 1minute
Mechanical performance	Rotational torque	_____		7mN·m max.
	Detent torque	1.6±1.3mN·m	5±3mN·m	8±5mN·m
	Push-pull strength	_____		100N
	Vibration	_____		
Environmental performance	Cold	-40±3°C for 240h		-30±3°C for 240h
	Dry heat	85±3°C for 240h		80±3°C for 240h
	Damp heat	40±2°C, 90 to 95%RH for 240h		40±2°C, 90 to 95%RH for 240h
Page	224	227	228	

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products

Incremental
Type

Absolute
Type

Push-on Switch Specifications

Items	EM20B
Contact arrangement	Single pole and single throw (Push-on)
Travel (mm)	0.5 ^{+0.4} _{-0.3}
Operating force (N)	6±3
Rating	0.1A 5V DC
Contact resistance	100mΩ max for initial period;200mΩ max after operating life
Operating life	25,000times min.

- Encoders Attached Parts220,234
- Encoders Cautions235, 236

Note

※ The operating temperature range for automotive applications can be raised upon request. Please contact us for details.