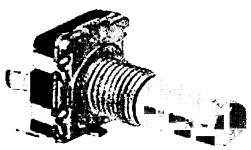
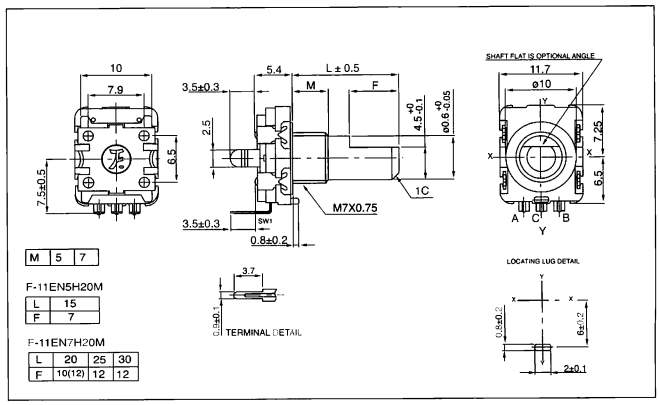
F-11E Series

Rotary Encoders

F-11EN □M H20M

Horizontal Type, Single Unit,
P.C.B. Terminal





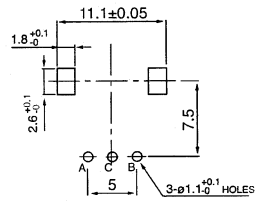
M	5	7

F-11EN5H20M

L	15
F	7

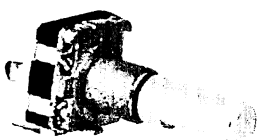
F-11EN7H20M

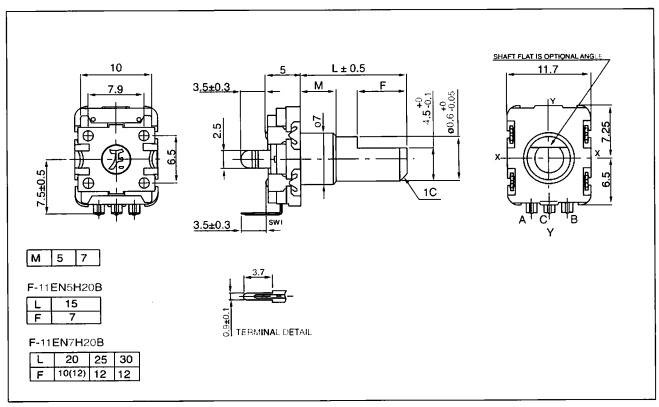
L	20	25	30
F	10(12)	12	12



F-11EN □M H20B

Horizontal Type, Single Unit,
P.C.B. Terminal





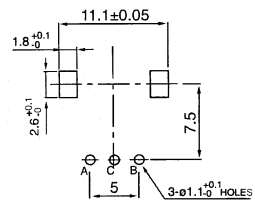
M	5	7

F-11EN5H20B

L	15
F	7

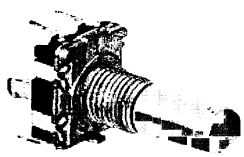
F-11EN7H20B

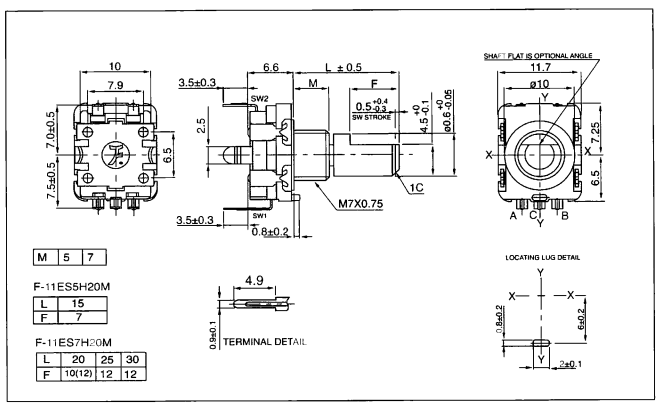
L	20	25	30
F	10(12)	12	12



F-11ES □M H20M

Horizontal Type, Single Unit With
Switch P.C.B. Terminal





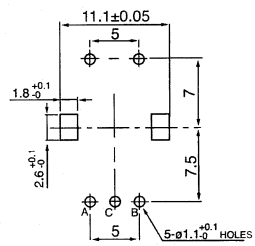
M	5	7

F-11ES5H20M

L	15
F	7

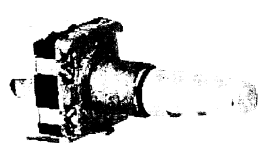
F-11ES7H20M

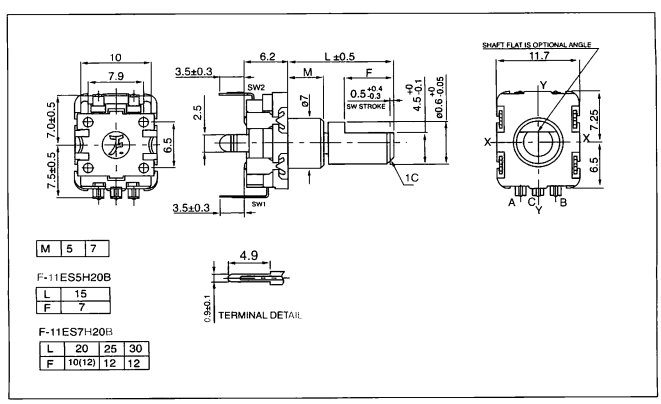
L	20	25	30
F	10(12)	12	12



F-11ES □M H20B

Horizontal Type, Single Unit With
Switch P.C.B. Terminal





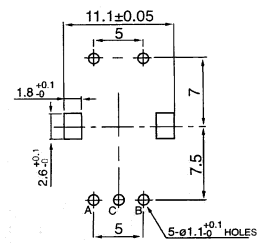
M	5	7

F-11ES5H20B

L	15
F	7

F-11ES7H20B

L	20	25	30
F	10(12)	12	12

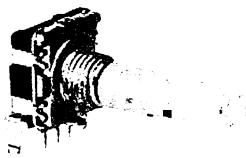


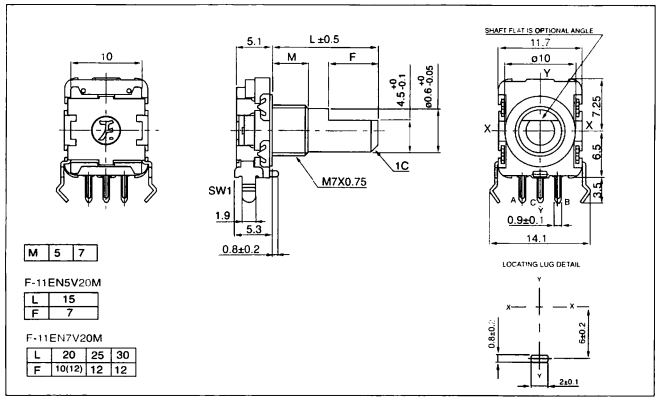
F-11E Series

Rotary Encoders

F-11EN□V20M

Vertical Type, Single Unit,
P.C.B. Terminal





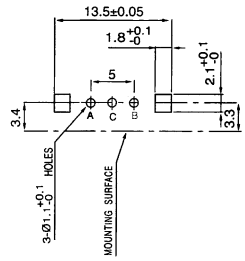
M	5	7

F-11EN5V20M

L	15
F	7

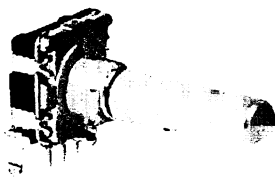
F-11EN7V20M

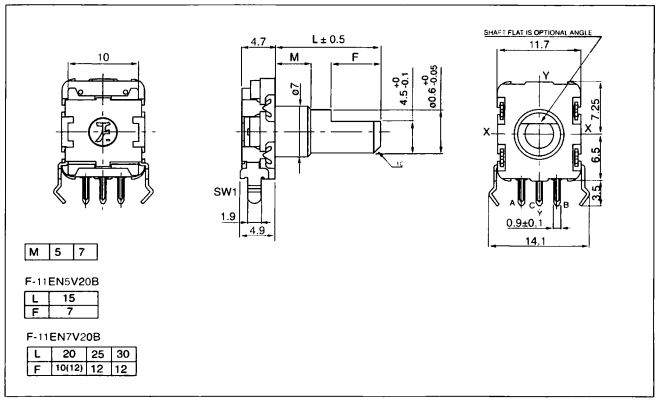
L	20	25	30
F	10(12)	12	12



F-11EN□V20B

Vertical Type, Single Unit,
P.C.B. Terminal





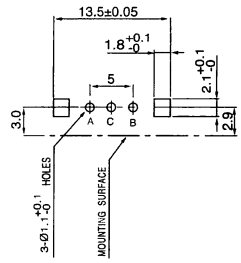
M	5	7

F-11EN5V20B

L	15
F	7

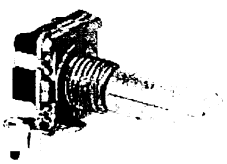
F-11EN7V20B

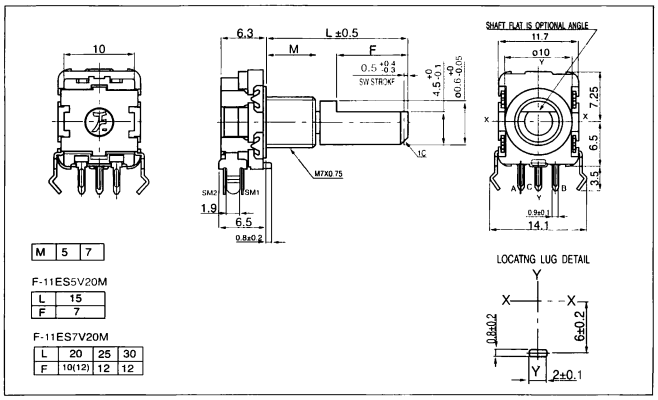
L	20	25	30
F	10(12)	12	12



F-11ES□V20M

Vertical Type, Single Unit With
Switch P.C.B. Terminal





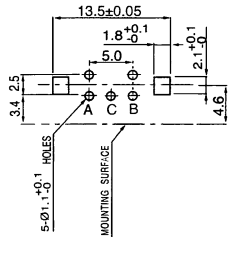
M	5	7

F-11ES5V20M

L	15
F	7

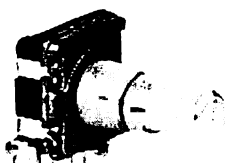
F-11ES7V20M

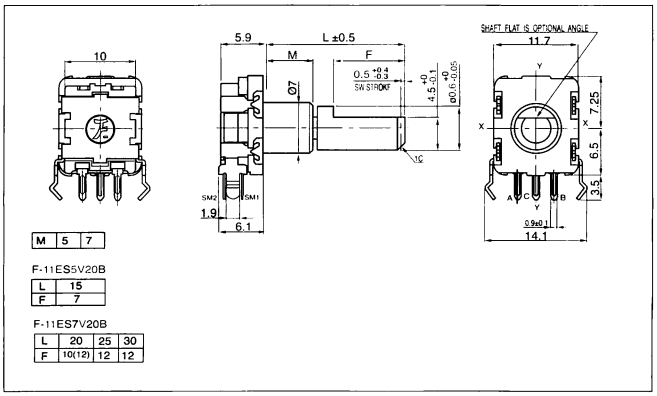
L	20	25	30
F	10(12)	12	12



F-11ES□V20B

Vertical Type, Single Unit With
Switch P.C.B. Terminal





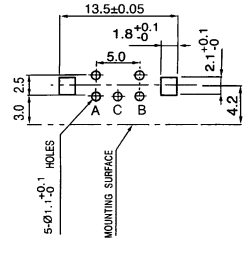
M	5	7

F-11ES5V20B

L	15
F	7

F-11ES7V20B

L	20	25	30
F	10(12)	12	12



F-11E Series

Rotary Encoders

SPECIFICATIONS

Electrical Characteristics

- Rated Power.....DC5V 10mA (1mA Min)
- Oscillation.....t1,t3 ≤ 2ms
- Sliding Nosie (Bounce).....t2 ≤ 2ms
- Sliding Nosie.....3.5V Min
- Phase Difference..... △T≥4ms
- Withstand Voltage.....1 minute at AC 300V
- Insulation Resistance.....More than 100MΩ at DC 250V

Mechanical Characteristics

- Total Rotational Angle.....Continuous
- Rotational Torque of Detent.....120 ± 80 gf.cm(at 5~ 35ºC)
- Number and Position of Detent.....20 Detents (Step Angle: 18º±3º)
- Push - Pull Strength.....5.0kgf Min
- Bushing & Nut Tight Strength.....8kgf.cm Min.

Durability

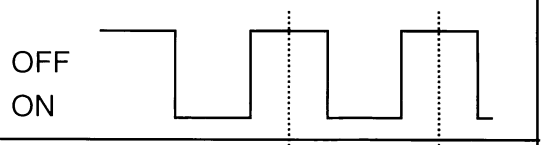
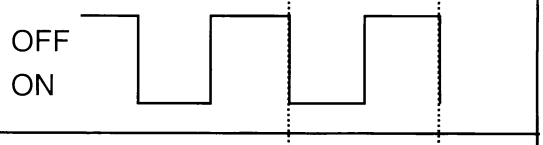
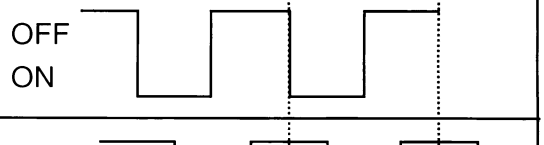
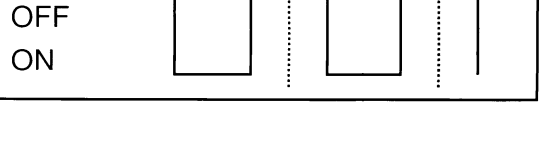
- Rotational Life .....15,000 Cycles Min.

Switch Specifications

- Maximum Ratings.....DC5V 10mA (1mA Min)
- Contact Resistance.....100mΩ Max
- Insulation Resistance.....More than 100MΩ at DC 250V
- Withstand Voltage.....1 Minute at AC 300V
- Travel.....0.5 $^{+0.4}_{-0.3}$ mm
- Operating Force.....550 ± 300 gf

Durability

- Operating Life.....15,000 Cycles Min

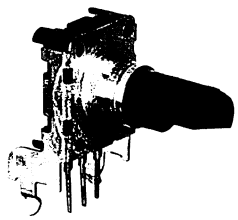
Shaft rotational direction	Signal	Direction
C.W	A(Terminal A-C)	
	B(Terminal B-C)	
C.C.W	A(Terminal A-C)	
	B(Terminal B-C)	

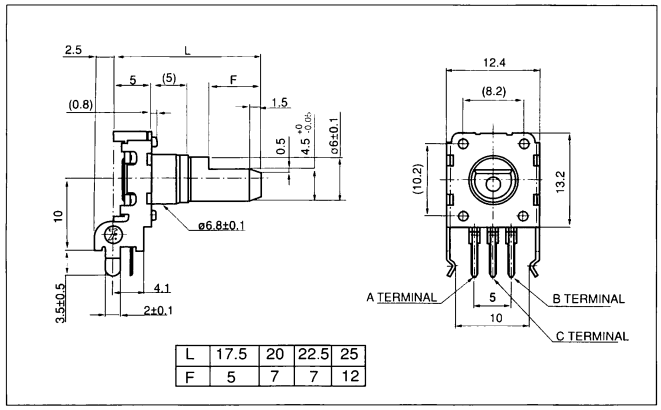
F-12E Series

Rotary Encoders

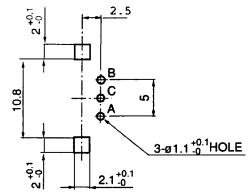
F-12EN5V24B

Vertical Type, Single Unit,
Click available



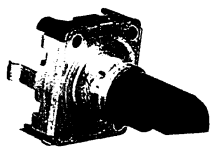


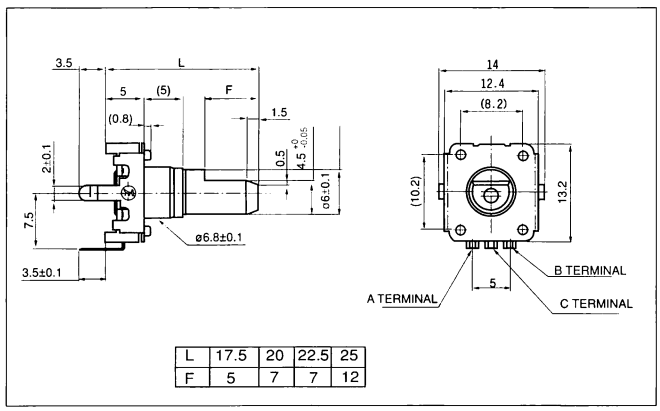
L	17.5	20	22.5	25
F	5	7	7	12



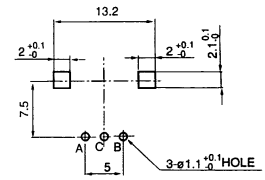
F-12EN5H24B

Horizontal Type, Single Unit ,
Click available



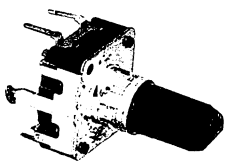


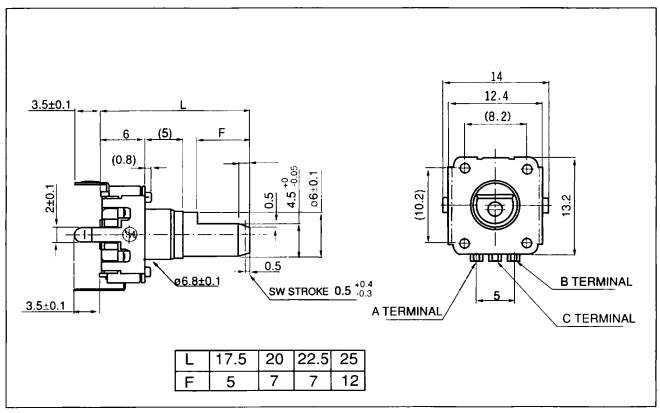
L	17.5	20	22.5	25
F	5	7	7	12



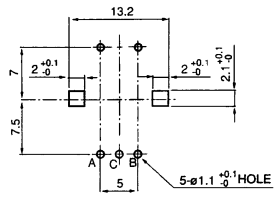
F-12ES5H24B

Horizontal Type, Single Unit ,
With Switch Click available



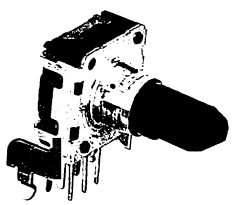


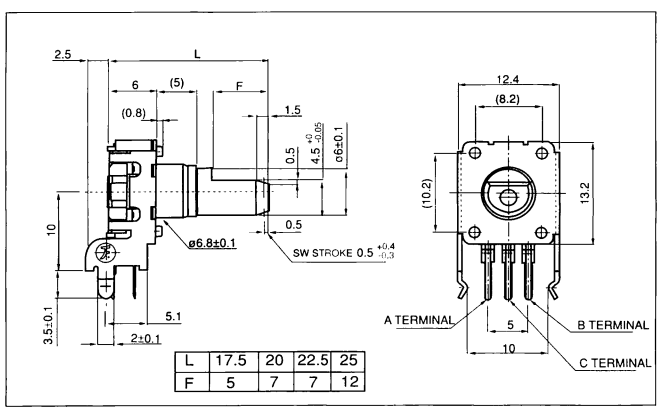
L	17.5	20	22.5	25
F	5	7	7	12



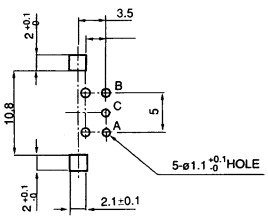
F-12ES5V24B

Vertical Type, Single Unit,
With Switch Click available





L	17.5	20	22.5	25
F	5	7	7	12



F-12E Series

Rotary Encoders

SPECIFICATIONS

Electrical Characteristics

- Rated Power.....DC5V 10mA (1mA Min)
- Oscillation.....t1,t3 ≤ 3ms
- Sliding Nosie (Bounce).....t2 ≤ 2ms
- Sliding Nosie.....3.5V Min
- Phase Difference..... △T≥4ms
- Withstand Voltage.....1 minute at AC 50V
- Insulation Resistance.....More than 100MΩ at DC 50V

Mechanical Characteristics

- Total Rotational Angle..... Continuous
- Rotational Torque of Detent.....30 ± 20 gf.cm(at 5~ 35°C)
- Number and Position of Detent.....24 Detents (Step Angle: 15°±3°)
- Push - Pull Strength.....5.0kgf Min

Durability

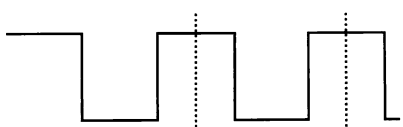
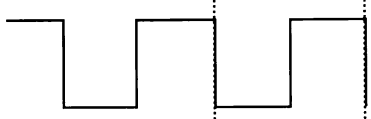
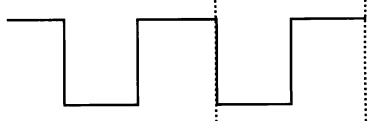
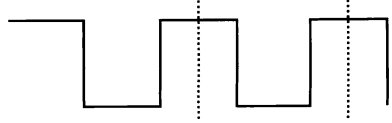
- Rotational Life .....30,000 Cycles Min.

Switch Specifications

- Maximum Ratings.....DC5V 10mA (1mA Min)
- Contact Resistance..... 100mΩ Max
- Insulation Resistance.....More than 10MΩ at DC 50V
- Withstand Voltage.....1 Minute at AC 60V
- Travel..... .....$0.5^{+0.4}_{-0.3}$mm
- Operating Force.....550 ± 300 gf

Durability

- Operating Life.....15,000 Cycles Min

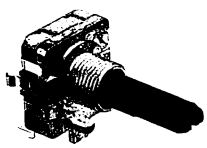
Shaft rotational direction	Signal	Direction
C.W	A(Terminal A-C)	
	B(Terminal B-C)	
C.C.W	A(Terminal A-C)	
	B(Terminal B-C)	

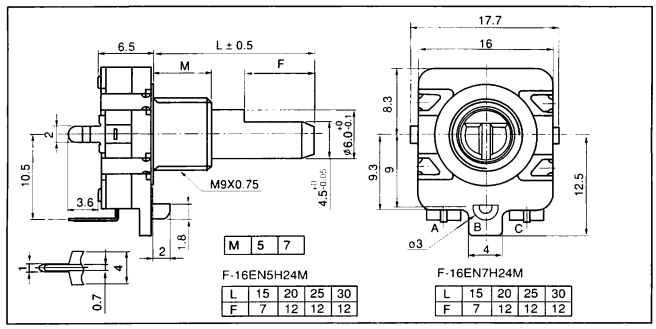
F-16E Series

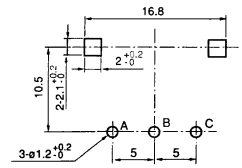
Rotary Encoders

F-16EN□M H24M

Horizontal Type, Single Unit,
P.C.B. Terminal

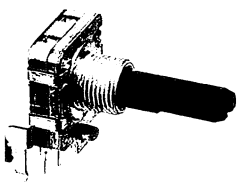


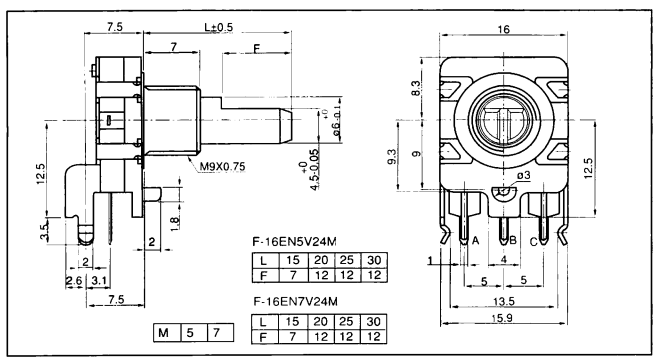


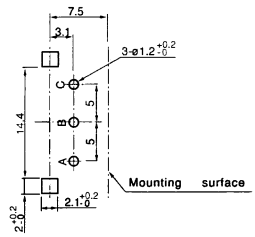


F-16EN□M V24M

Vertical Type, Single Unit,
P.C.B. Terminal







SPECIFICATIONS

Electrical Characteristics

- Rated Power.....DC5V 5mA (0.5mA Min)
- Oscillation..... .....t1,t3 ≤ 3mS
- Sliding Nosie (Bounce).....t2 ≤ 2mS
- Sliding Nosie.....3.5V Min
- Phase Difference..... △ T≥4ms
- Withstand Voltage.....1 minute at AC 50V
- Insulation Resistance.....More than 10MΩ at DC 50V

Mechanical Characteristics

- Total Rotational Angle..... Continuous
- Rotational Torque of Detent.....120 ± 80 gf.cm(at 5~ 35ºC)
- Number and Position of Detent.....24 Detents (Step Angle: 15º±3º)
- Push - Pull Strength.....8.0kgf Min
- Bushing & Nut Tight Strength.....10.0kgf Min

Durability

- Rotational Life .....15,000 Cycles Min.

Output signal and Rotational direction