

**SERIES:** ACZ11 | **DESCRIPTION:** MECHANICAL INCREMENTAL ENCODER**ELECTRICAL SPECIFICATIONS**

parameter	conditions/description
output waveform	square wave
output signals	A, B phase
current consumption	10 mA
output phase difference	T1, T2, T3, T4 $\geq$ 3.5 ms @ 60 rpm (see output waveform)
supply voltage	5 V dc max.
output resolution	12, 15, 20, 30 ppr
switch rating	12 V dc, 50 mA (ACZ11BRXE models only)
insulation resistance	300 V dc, 100 M $\Omega$
withstand voltage	300 V ac

**MECHANICAL SPECIFICATIONS**

parameter	conditions/description	min	nom	max	units
shaft load	axial			8	kgf
rotational torque	with detent click	60	140	220	gf•cm
	without detent click	60	80	100	gf•cm
push switch operational force	(ACZ11BRXE models only)	300		900	gf•cm
push switch life	(ACZ11BRXE models only)			50,000	cycles
rotational life				30,000	cycles

**ENVIRONMENTAL SPECIFICATIONS**

parameter	conditions/description	min	nom	max	units
operating temperature		-10		65	°C
storage temperature		-40		75	°C
humidity		85			% RH
vibration	0.75 mm max. travel for 2 hours	10		55	Hz

**PART NUMBER KEY****ACZ11 X BR X E- XX XX X1- XXX**

Version:  
 "blank" = switch (momentary)  
 N = no switch

Bushing:  
 1 = M7 x 0.75 (H = 5)  
 2 = M7 x 0.75 (H = 7)  
 4 = smooth (H = 5)  
 5 = smooth (H = 7)

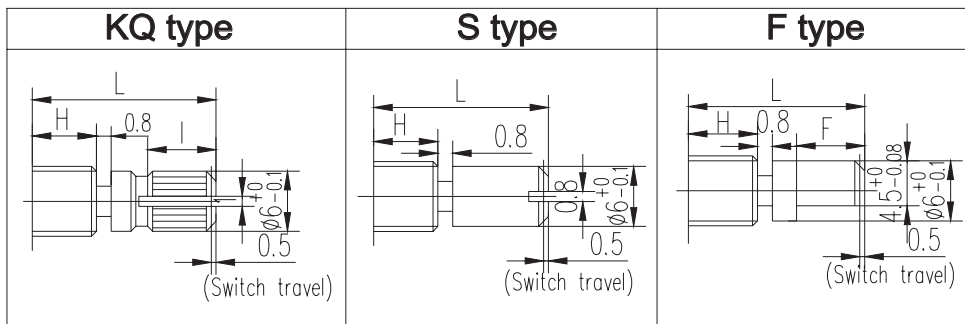
Shaft length:  
 15, 20, 25

Shaft type:  
 KQ, S, F

Mounting orientation:  
 A = Horizontal  
 D = Vertical

Resolution (ppr):  
 12 = 12 ppr, no detent  
 12C = 12 ppr, 12 detent  
 15 = 15 ppr, no detent  
 30C15P = 15 ppr, 30 detent  
 20 = 20 ppr, no detent  
 20C = 20 ppr, 20 detent  
 30 = 30 ppr, no detent  
 30C = 30 ppr, 30 detent

## SHAFT OPTIONS



BUSHING		
Condition	H	
1 M7-P0.7	5	5
2 M7-P0.7	5	7
4 smooth	5	
5 smooth	7	

switch travel for ACZ11BRXE only

H=5

	15KQ	20KQ	25KQ
L	15	20	25
I	7	10	12

H=5

	15S	20S	25S
L	15	20	25

H=5

	15F	20F	25F
L	15	20	25
F	8	12	12

H=7

	15KQ	20KQ	25KQ
L	15	20	25
I	5	8.5	10

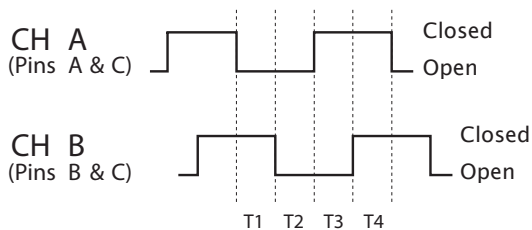
H=7

	15S	20S	25S
L	15	20	25

H=7

	15F	20F	25F
L	15	20	25
F	8	12	12

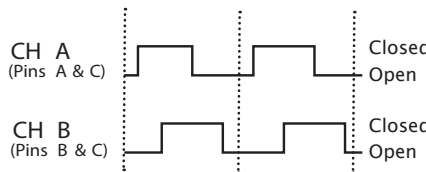
## OUTPUT WAVEFORM



CW direction (@ 60 rpm)

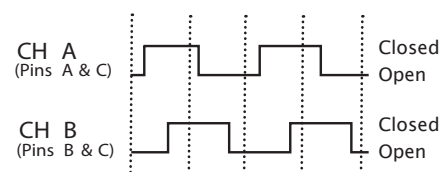
## DETENT POSITIONS

### Model 12C & 20C



CW direction →

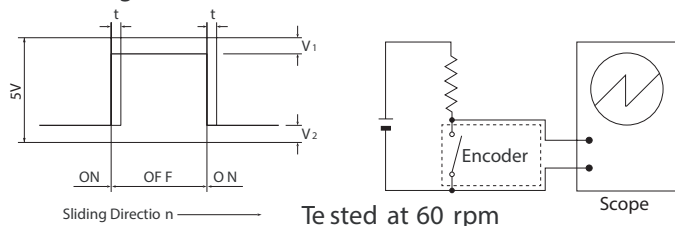
### Model 15P30C



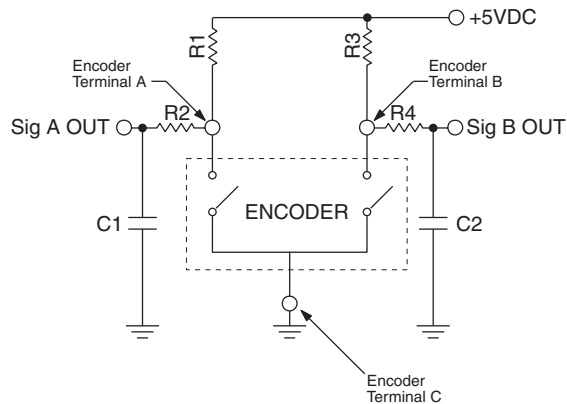
CW direction →

## SLIDING NOISE

$t =$  Masking time to avoid chatter (5mS)  $V_1 = V_2 = 1V$  max.



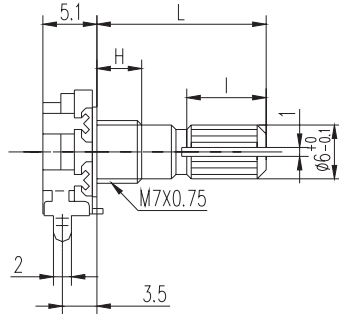
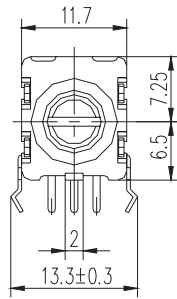
## SUGGESTED FILTER



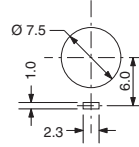
R1, R2, R3, R4 = 10kΩ  
C1, C2 = 0.01μF

## MECHANICAL DRAWING (horizontal)

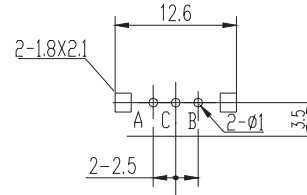
ACZ11NBRXE



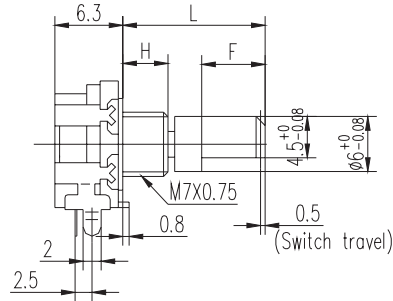
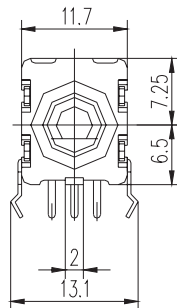
PANEL CUT-OUT



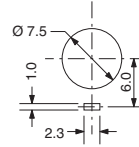
PCB LAYOUT



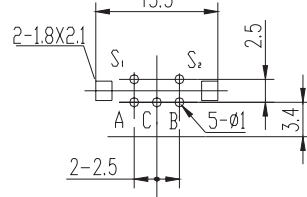
ACZ11BRXE



PANEL CUT-OUT

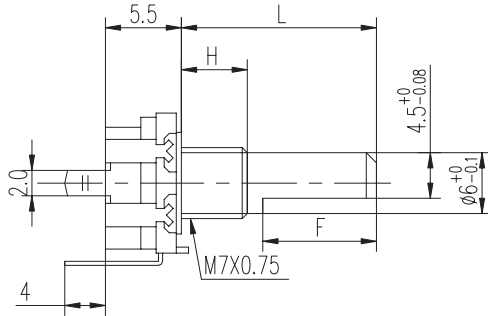
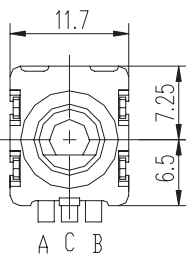


PCB LAYOUT

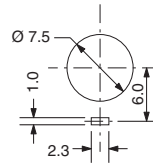


## MECHANICAL DRAWING (vertical)

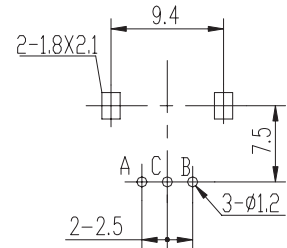
ACZ11NBRXE



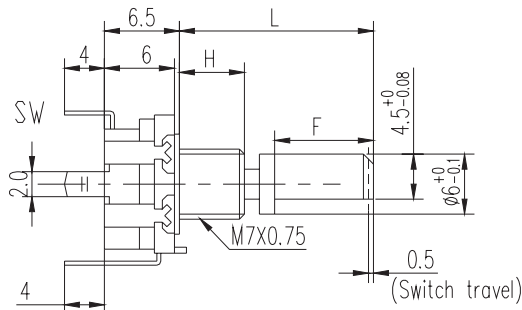
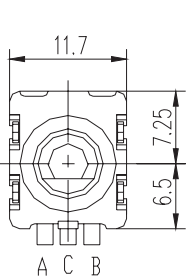
PANEL CUT-OUT



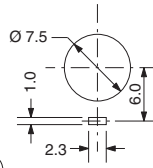
PCB LAYOUT



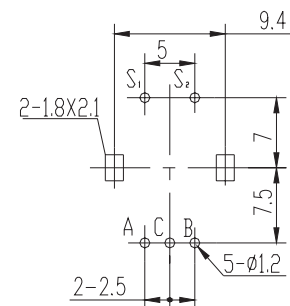
ACZ11BRXE



PANEL CUT-OUT



PCB LAYOUT



## REVISION HISTORY

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rev.	description	date
1.0	initial release	10/30/2009
1.01	brand update	10/04/2019
1.02	updated datasheet	06/15/2020

The revision history provided is for informational purposes only and is believed to be accurate.

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