



**THE DATASHEET OF
ACZ11BR1E-15FD1-12C**



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

ELECTRICAL SPECIFICATIONS

| parameter | conditions/description | min | typ | max | units |
|-------------------------|---|-----|-----|-----|-------|
| 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 Ω | | | | |
| withstand voltage | 300 V ac | | | | |

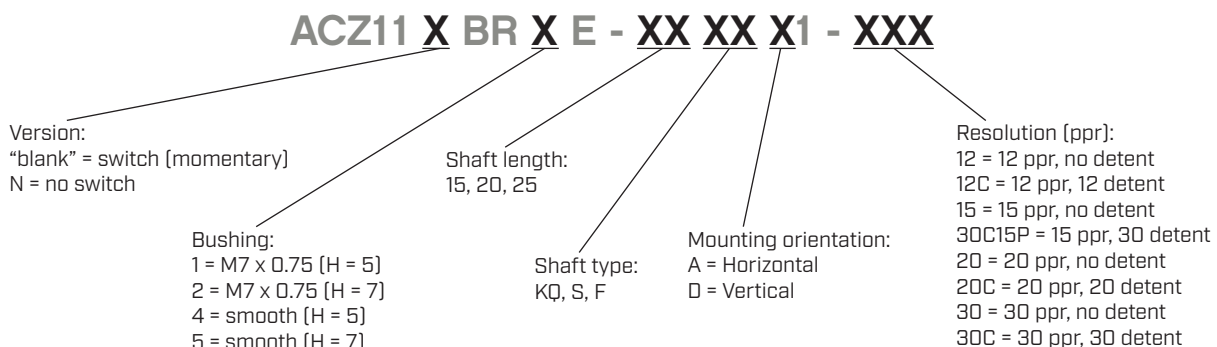
MECHANICAL SPECIFICATIONS

| parameter | conditions/description | min | typ | max | units |
|-------------------------------|---|----------|-----------|------------|----------------|
| shaft load | axial | | | 8 | kgf |
| rotational torque | with detent click without detent click | 60 60 | 140 80 | 220 100 | gf·cm 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

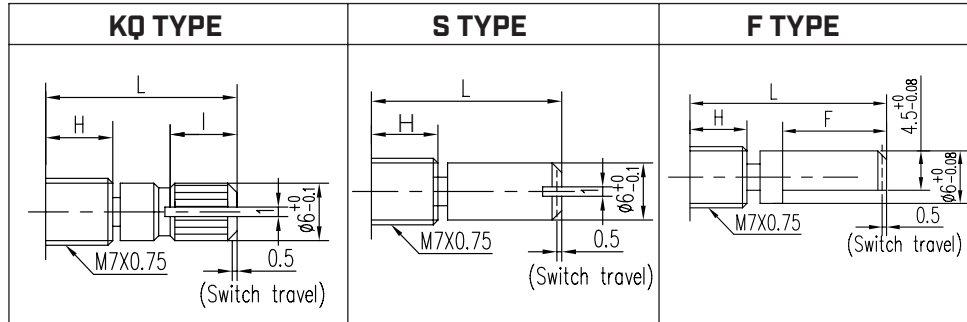
| parameter | conditions/description | min | typ | max | units |
|-----------------------|---------------------------------|-----|-----|-----|--------------|
| operating temperature | | -10 | | 65 | $^{\circ}$ C |
| storage temperature | | -40 | | 75 | $^{\circ}$ C |
| humidity | | 85 | | | % RH |
| vibration | 0.75 mm max. travel for 2 hours | 10 | | 55 | Hz |

PART NUMBER KEY



Replacement Hardware:
M7x0.75 Nut: 071-0068R
Washer: 071-0069R

SHAFT OPTIONS (VERSIONS WITH SWITCH)



H=5

| | 15KQ | 20KQ | 25KQ |
|---|------|------|------|
| L | 15 | 20 | 25 |
| I | 6 | 8.5 | 12 |

H=5

| | 15S | 20S | 25S |
|---|-----|-----|-----|
| L | 15 | 20 | 25 |

H=5

| | 15F | 20F | 25F |
|---|-----|-----|-----|
| L | 15 | 20 | 25 |
| F | 8 | 10 | 12 |

H=7

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

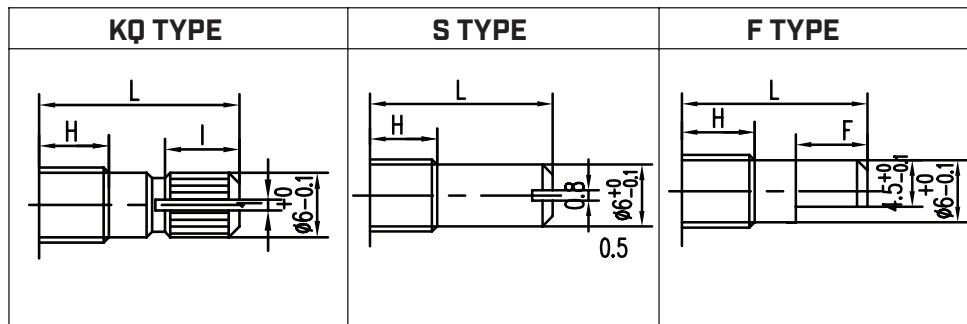
H=7

| | 15S | 20S | 25S |
|---|-----|-----|-----|
| L | 15 | 20 | 25 |

H=7

| | 15F | 20F | 25F |
|---|-----|-----|-----|
| L | 15 | 20 | 25 |
| F | 8 | 10 | 12 |

SHAFT OPTIONS (VERSIONS WITHOUT SWITCH)



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 | 10 | 12 |

H=7

| | 15KQ | 20KQ | 25KQ |
|---|------|------|------|
| L | 15 | 20 | 25 |
| I | 5 | 10 | 10 |

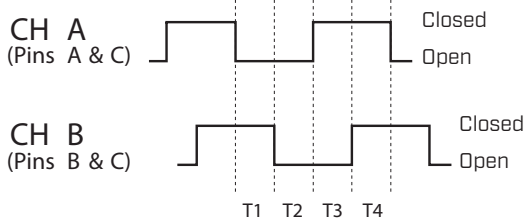
H=7

| | 15S | 20S | 25S |
|---|-----|-----|-----|
| L | 15 | 20 | 25 |

H=7

| | 15F | 20F | 25F |
|---|-----|-----|-----|
| L | 15 | 20 | 25 |
| F | 8 | 10 | 12 |

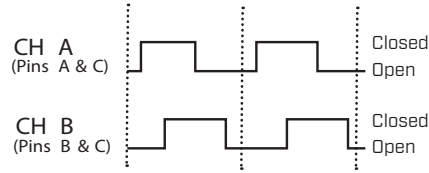
OUTPUT WAVEFORM



CW direction (@ 60 rpm)

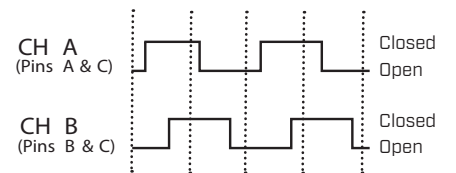
DETENT POSITIONS

Model 12C & 20C



CW direction →

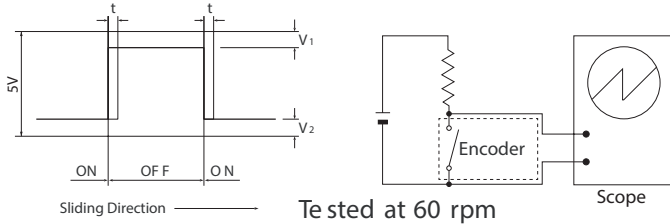
Model 15P30C



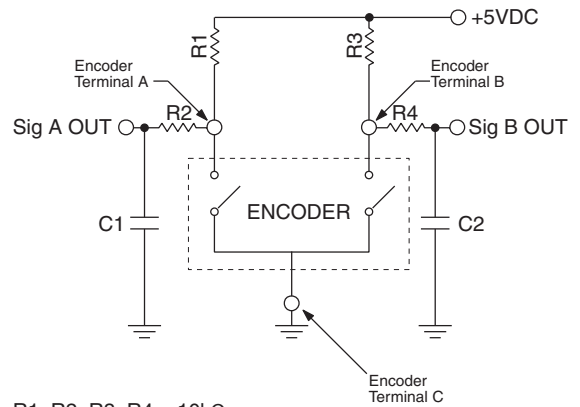
CW direction →

SLIDING NOISE

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



SUGGESTED FILTER

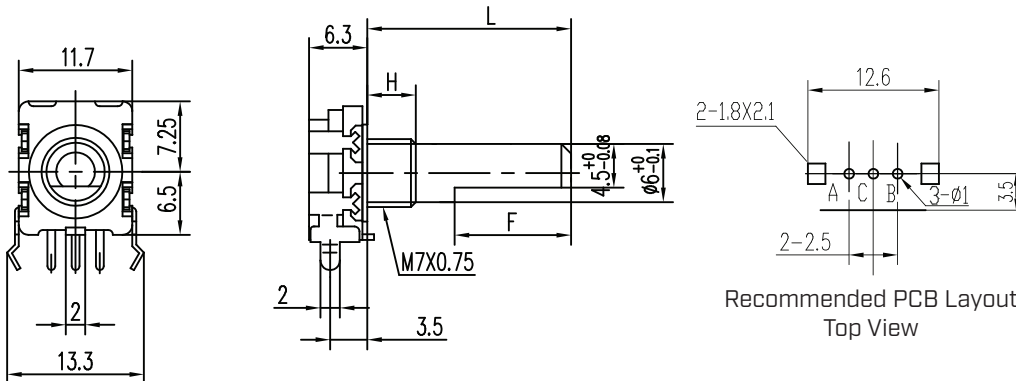


$R_1, R_2, R_3, R_4 = 10k\Omega$
 $C_1, C_2 = 0.01\mu F$

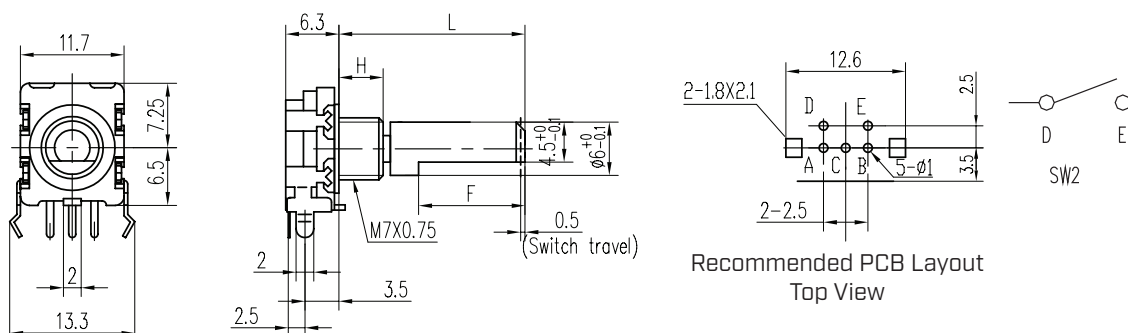
MECHANICAL DRAWING (HORIZONTAL)

units: mm
 tolerance:
 $X \leq 10$: ± 0.3 mm
 $10 < X \leq 30$: ± 0.5 mm
 Unless otherwise noted

ACZ11NBRXE



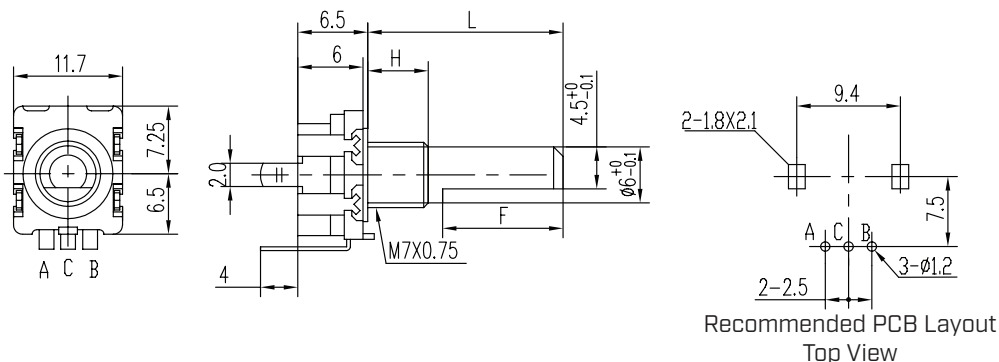
ACZ11BRXE



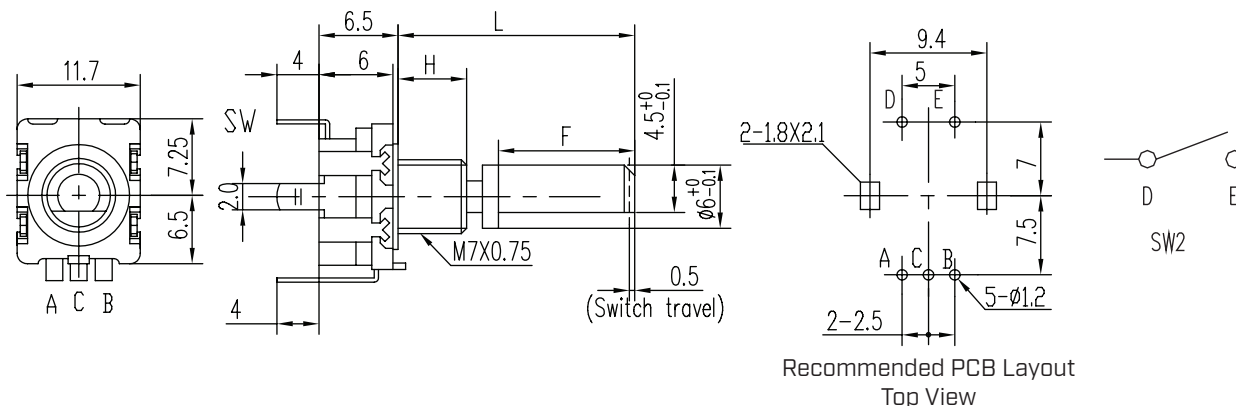
MECHANICAL DRAWING (VERTICAL)

units: mm
 tolerance:
 $X \leq 10$: ± 0.3 mm
 $10 < X \leq 30$: ± 0.5 mm
 Unless otherwise noted

ACZ11NBRXE



ACZ11BRXE



REVISION HISTORY

| rev. | description | date |
|------|--|------------|
| 1.0 | initial release | 10/30/2009 |
| 1.01 | brand update | 10/04/2019 |
| 1.02 | updated datasheet | 06/15/2020 |
| 1.03 | updated drawings; logo, datasheet style update | 09/08/2022 |

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



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