



**SERIES:** ACZ12 | **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 ≥ 3.5 ms @ 60 rpm (see output waveform) |     |     |     |       |
| supply voltage          | 12 V dc max.   |     |     |     |       |
| output resolution       | 12, 24 ppr   |     |     |     |       |
| switch rating           | 12 V dc, 50 mA (ACZ12BRXE models only)                 |     |     |     |       |
| insulation resistance   | 300 V dc, 100 MΩ                                       |     |     |     |       |
| withstand voltage       | 300 V ac   |     |     |     |       |

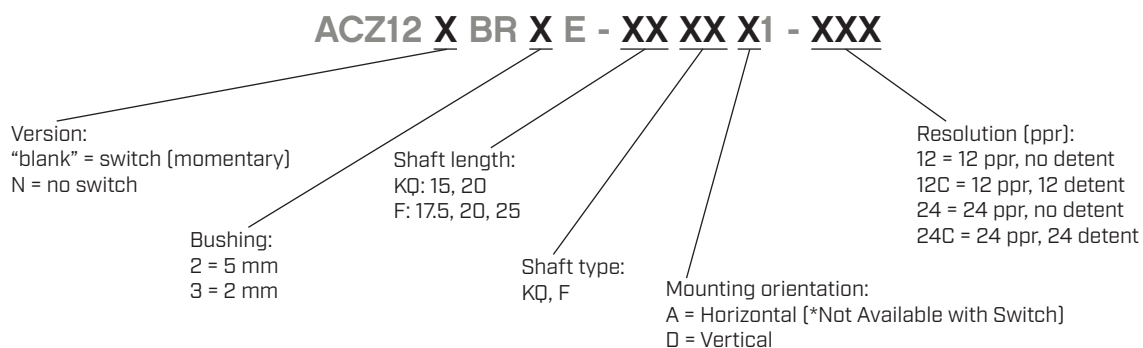
**MECHANICAL SPECIFICATIONS**

| parameter                     | conditions/description                    | min      | typ | max        | units          |
|-------------------------------|---|----------|-----|------------|----------------|
| shaft load                    | axial                                     |          |     | 3          | kgf            |
| rotational torque             | with detent click<br>without detent click | 30<br>60 | 80  | 200<br>100 | gf•cm<br>gf•cm |
| push switch operational force | [ACZ12BRXE models only]                   | 300      |     | 900        | gf•cm          |
| push switch life              | [ACZ12BRXE models only]                   |          |     | 50,000     |                |
| rotational life               |   |          |     | 30,000     | cycles         |

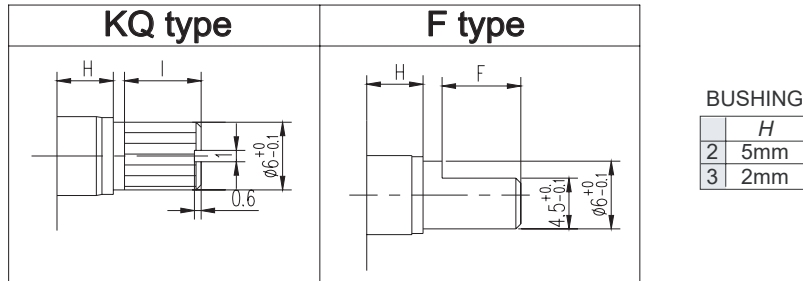
**ENVIRONMENTAL SPECIFICATIONS**

| parameter             | conditions/description          | min | typ | max | units |
|-----------------------|---------------------------------|-----|-----|-----|-------|
| operating temperature |                                 | -10 |     | 75  | °C    |
| storage temperature   |                                 | -20 |     | 85  | °C    |
| humidity              |                                 | 85  |     |     | % RH  |
| vibration             | 0.75 mm max. travel for 2 hours | 10  |     | 55  | Hz    |

**PART NUMBER KEY**



## SHAFT OPTIONS



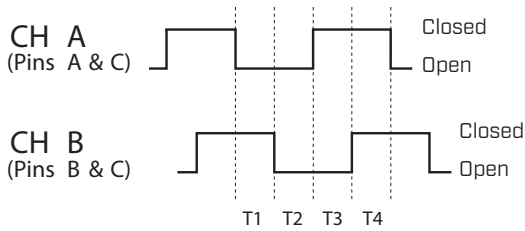
H= 2 or 5 (mm)

|   | 20KQ | 15KQ |
|---|------|------|
| L | 20   | 15   |
| I | 7    | 5    |

H= 2 or 5 (mm)

|   | 25F | 20F | 17F  |
|---|-----|-----|------|
| L | 25  | 20  | 17.5 |
| F | 12  | 7   | 5    |

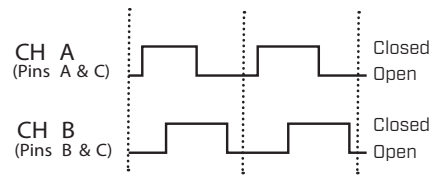
## OUTPUT WAVEFORM



CW direction (@ 60 rpm)

## DETENT POSITIONS

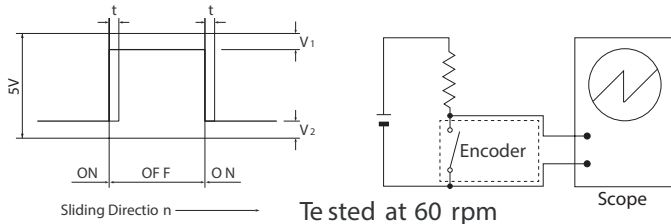
Model 12C & 24C



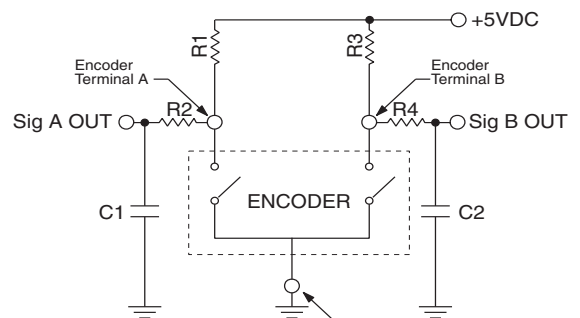
CW direction →

## SLIDING NOISE

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

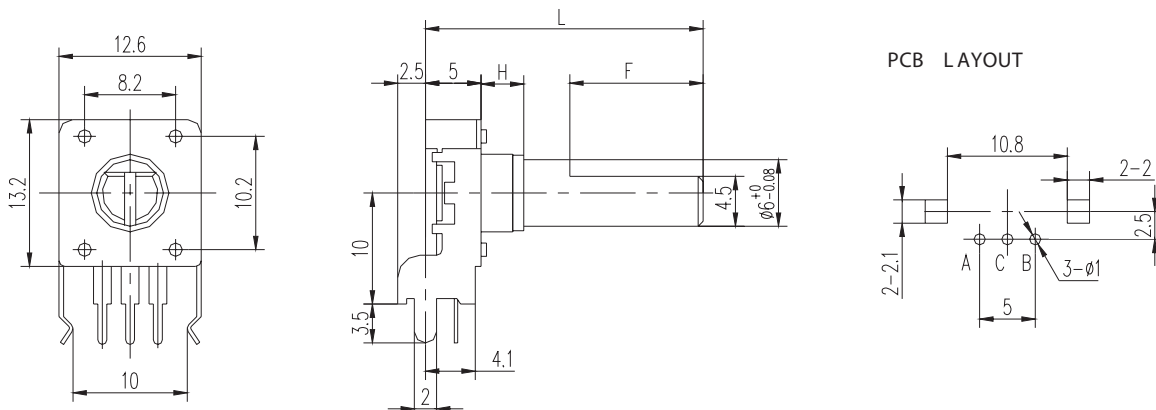


## SUGGESTED FILTER



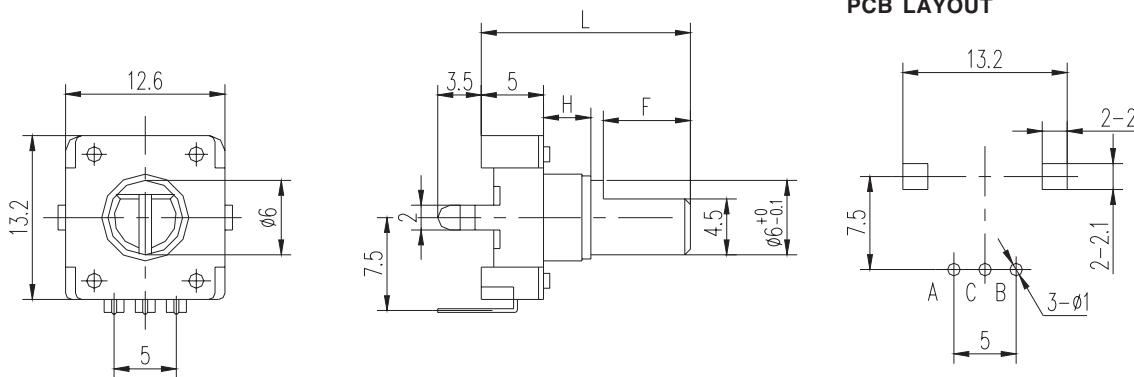
R1, R2, R3, R4 = 10kΩ  
C1, C2 = 0.01μF

## MECHANICAL DRAWING (HORIZONTAL)

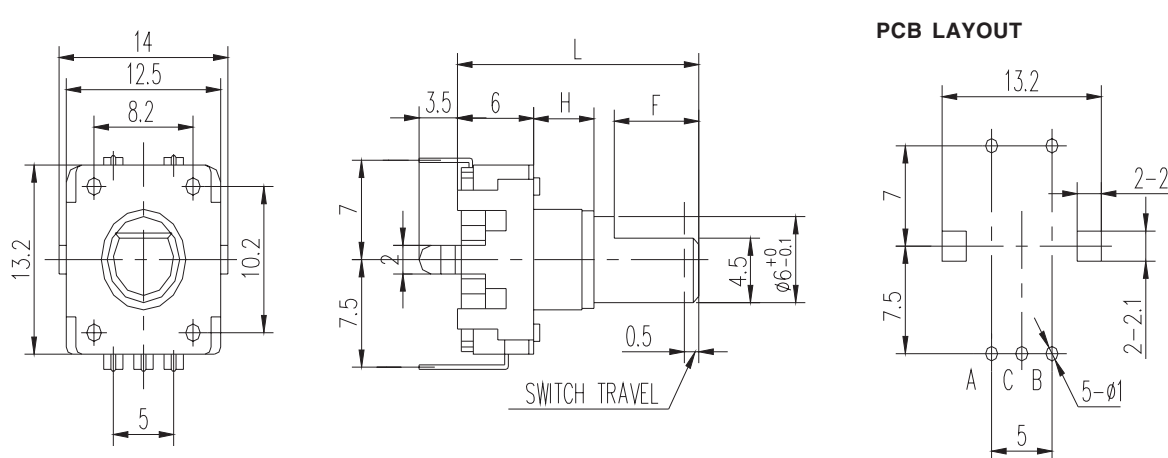


## MECHANICAL DRAWING (VERTICAL)

ACZ12NBRXE



ACZ12BRXE



## 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 | logo, datasheet style update      | 09/08/2022 |
| 1.04 | CUI Devices rebranded to Same Sky | 09/12/2024 |

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



Same Sky offers a one (1) year limited warranty. Complete warranty information is listed on our website.

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