

# **AEDR-9820 & 9830**

## **Evaluation Board User Guide**

**User Guide**  
**Version 1.0**

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# 1.0 Top and Bottom Views

Figure 1 Bottom Side of the PCB

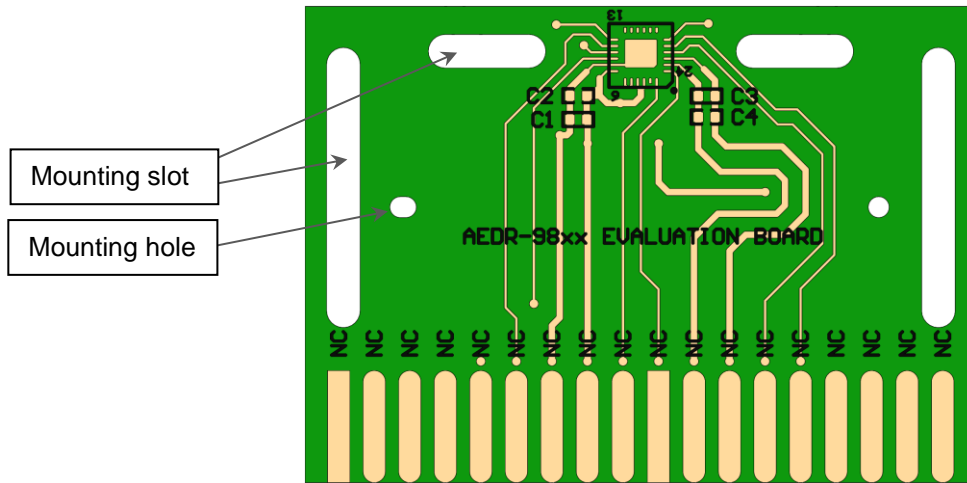
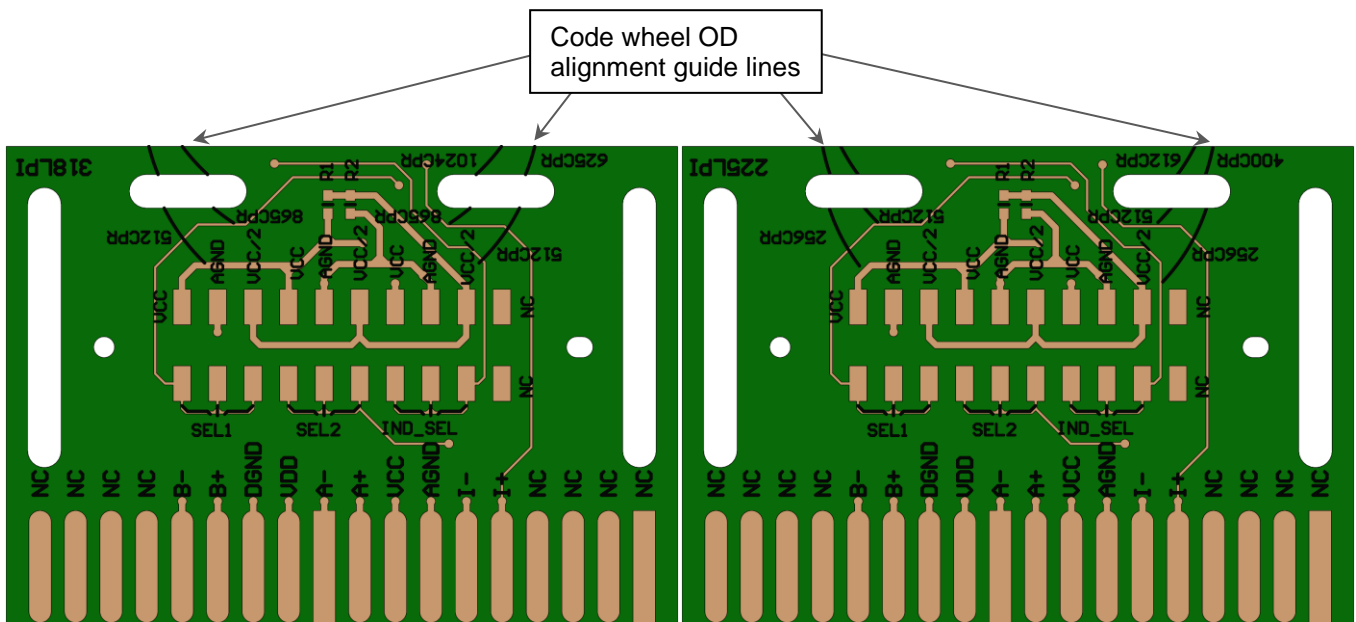


Figure 2 Top Side of the PCB (Left 318 LPI & Right 225 LPI)



**NOTE** Please remove the protective kapton tape covering the encoder ASIC before use.

The silk screen printed guide line on the PCB is to help in providing visual alignment of the code wheel edge (outer diameter) for each of the different Rop (CPR) track. A sample diagram showing the position when encoder is aligned to 625 CPR track is as shown in Figure 3 below.

Figure 3 Bottom Side of the PCB

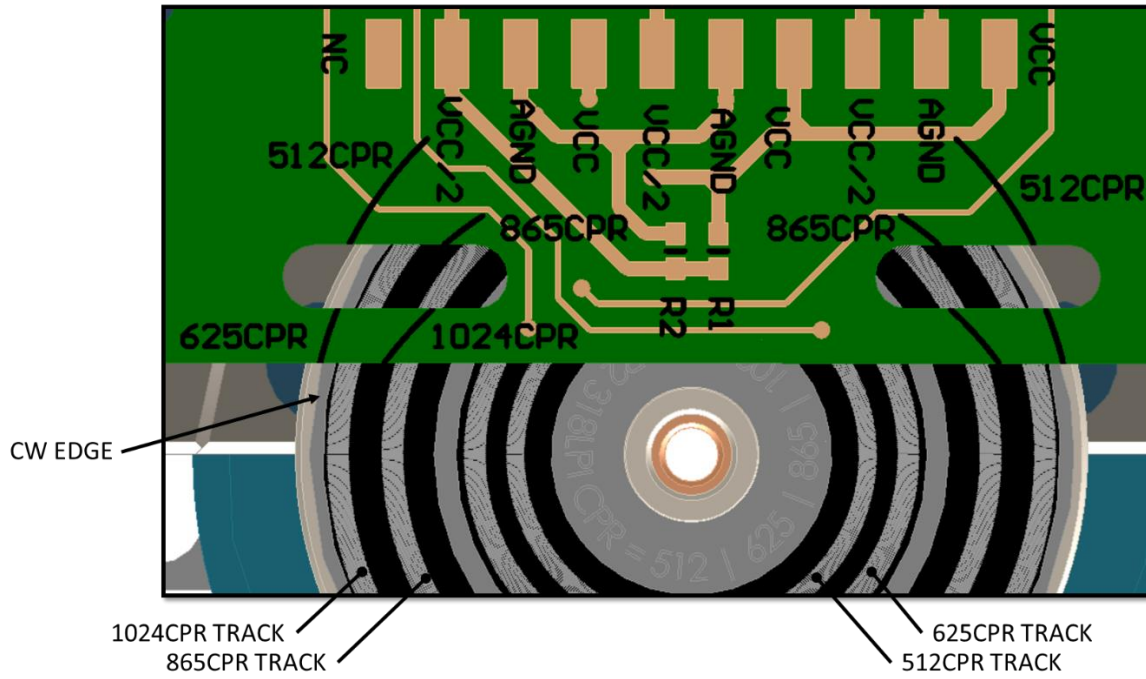
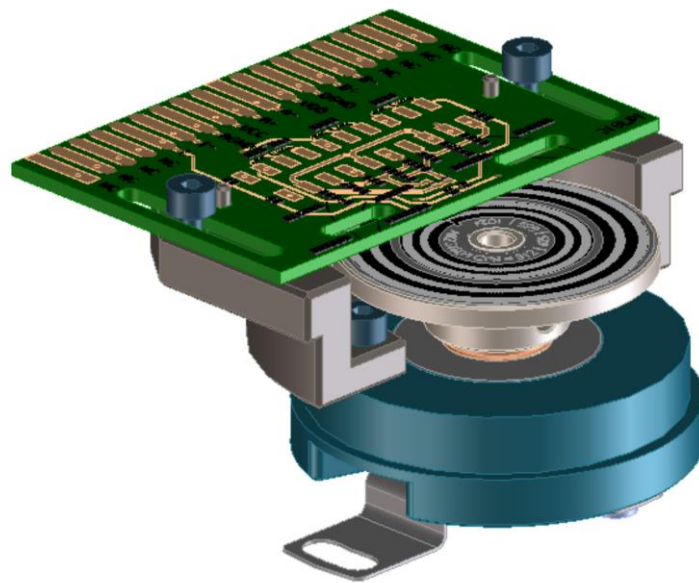


Figure 4 Sample Evaluation Board Mounting with reference to Code Wheel



## 2.0 Select Options

### 2.1 Selection Table

Table 1 Selection Table for 318 LPI AEDR-9830 Variant

SEL1	SEL 2	INDEX SEL	Interpolation Factor	Index	Max output frequency	CPR @ROP 7.95mm	CPR @ROP 11 mm
Open	Open	Low	1X	Gated 90 deg	200 kHz	625	865
		High		Gated 180 deg			
		Open		Ungated raw			
Open	Low	Low	2X	Gated 90 deg	400 kHz	1250	1730
		High		Gated 180 deg			
		Open		Gated 360 deg			
High	High	Low	4X	Gated 90 deg	800 kHz	2500	3460
		High		Gated 180 deg			
		Open		Gated 360 deg			
Low	Low	Low	8X	Gated 90 deg	1.6 MHz	5000	6920
		High		Gated 180 deg			
		Open		Gated 360 deg			
High	Low	Low	16X	Gated 90 deg	2.0 MHz	10000	13840
		High		Gated 180 deg			
		Open		Gated 360 deg			
Open	High	NA	Analog (500mVpp)	Analog	200 kHz	NA	NA
Low	High	NA	Analog 1Vpp	Ungated Digital			
High / Low	Open	NA	Analog 1Vpp	Analog			

Table 2 Selection Table for 225 LPI AEDR-9820 Variant

SEL1	SEL 2	INDEX SEL	Interpolation Factor	Index	Max output frequency	CPR @ROP 4.6 mm	CPR @ROP 11 mm
Open	Open	Low	1X	Gated 90 deg	200 kHz	256	612
		High		Gated 180 deg			
		Open		Ungated raw			
Open	Low	Low	2X	Gated 90 deg	400 kHz	512	1224
		High		Gated 180 deg			
		Open		Gated 360 deg			
High	High	Low	4X	Gated 90 deg	800 kHz	1024	2448
		High		Gated 180 deg			
		Open		Gated 360 deg			
Low	Low	Low	8X	Gated 90 deg	1.6 MHz	2048	4896
		High		Gated 180 deg			
		Open		Gated 360 deg			
High	Low	Low	16X	Gated 90 deg	2.0 MHz	4096	9792
		High		Gated 180 deg			
		Open		Gated 360 deg			
Open	High	NA	Analog (500mVpp)	Analog	200 kHz	NA	NA
Low	High	NA	Analog 1Vpp	Ungated Digital			
High / Low	Open	NA	Analog 1Vpp	Analog			



## 3.1 Connector Assignment

**Table 3 : Connector 1 Pin Assignment**

Connector 1 (Top Side)	Label
1	NC
2	NC
3	NC
4	NC
5	INDEX_P/I+
6	INDEX_P/I-
7	VSSA/AGND
8	VDDA/VCC
9	CH_A/A+
10	CH_AB/A-
11	VDD
12	VSSD/DGND
13	CH_B/B+
14	CH_BB/B-
15	NC
16	NC
17	NC
18	NC

The finger design of Connector 1 is match to the following connectors:

1. EDAC, CONN EDGE DUAL FEMALE 36POS 0.100, P/N# 395-036-520-202 or,
2. SULLINS, CONN EDGE DUAL FEMALE 36POS 0.100, P/N# EBC18DREH

The use of the above mentioned card edge connector is not needed if necessary connections can be made via manual soldering to the relevant card edge fingers.



**Table 4 Connector 2 Pin Assignment**

Connector 1 (Top Side)	Label	State
1	SEL1	VCC
2		AGND
3		OPEN
4	SEL2-	VCC
5		AGND
6		OPEN
7	INDEX_SEL	VCC
8		AGND
9		OPEN
10	NC	

**NOTE** Please refer to Table 1 (AEDR-9830 318 LPI) or Table 2 (AEDR-9820 225 LPI) for the various selection options available by changing the respective jumper position.

## 4.0 Code Wheel Drawing

For AEDR-9830 evaluation board sample, the matching code wheel sample drawing is as shown in Figure 4 below.

Figure 6 318 LPI 4-track (CPR) code wheel drawing

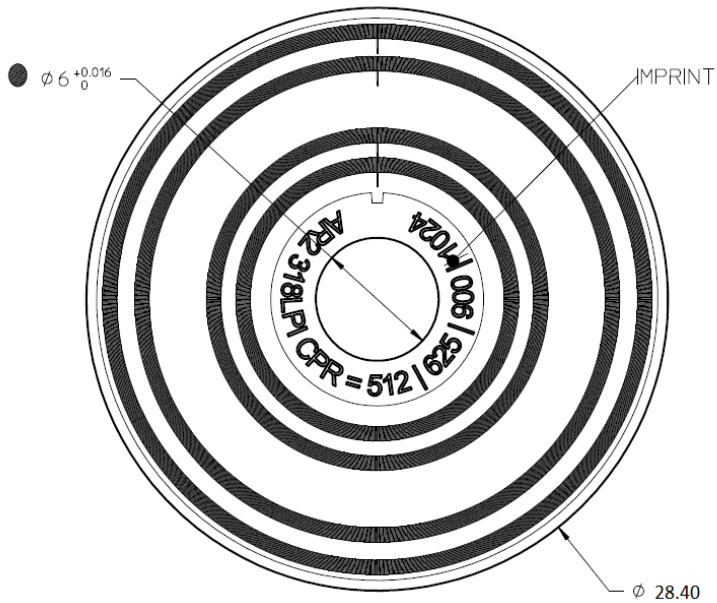


Table 1 : Data Track/Window

Signal Channel	Track	Window Width	CPR	Rop (mm)
INC	1	180°/512	512	6.5087
INDEX	1	180°/512	512	5.8835
INC	2	180°/625	625	7.9452
INDEX	2	180°/625	625	7.3200
INC	3	180°/865	865	11.4411
INDEX	3	180°/865	865	10.8161
INC	4	180°/1024	1024	13.0175
INDEX	4	180°/1024	1024	12.3925

For AEDR-9820 evaluation board sample, the matching code wheel sample drawing is as shown in Figure 5 below.

Figure 7 225 LPI 4-track (CPR) code wheel drawing

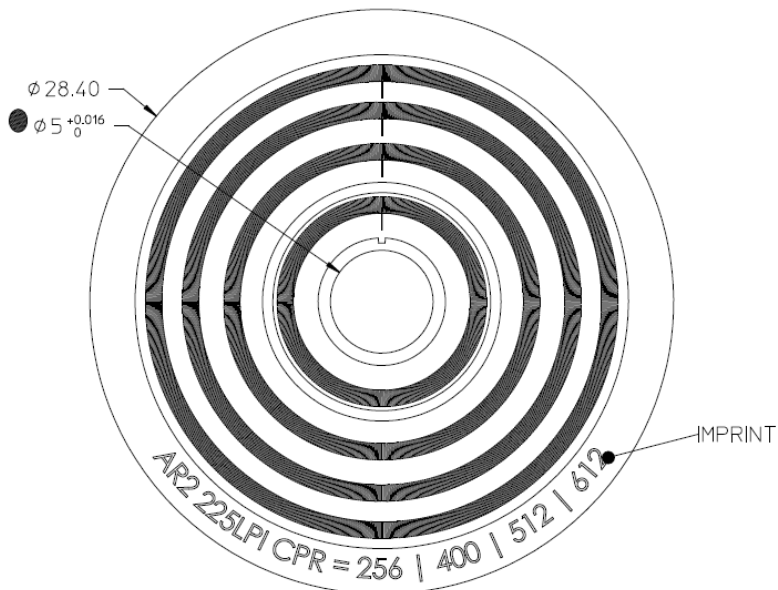


Table 1 : Data Track/Window

Signal Channel	Track	Window Width	CPR	Rop (mm)
INC	1	180°/256	256	4.5995
INDEX	1	180°/256	256	3.9743
INC	2	180°/400	400	7.1867
INDEX	2	180°/400	400	6.5615
INC	3	180°/512	512	9.1990
INDEX	3	180°/512	512	8.5738
INC	4	180°/612	612	10.9957
INDEX	4	180°/612	612	10.3705

For the detailed drawing of the sample code wheel, please do request from regional FAE.