

Vupiter Interface Design Trade Study

Goal:

- Identify best components for dc power supply user interface.

I/O:

- Voltage and current feedback to user, some display type.
- Control to adjust variables of power supply; knobs, keypad, or touchscreen.

Options:

- Feedback
 - 7-segment displays
 - TFT Screen
- Control
 - Keypad
 - Quadrature encoders
 - Touchscreen

Comparisons:

Criteria	Weight	Option 1	Option 2	Option 3
		Encoders	Buttons	Touchscreen
Price	3	0	0	0
Usability	2	++	-	+
Quality	1	0	0	++
Durability	1	0	0	0
Implementation	2	0	-	0
+		4	0	2
0		7	5	8
-		0	4	0
Total		11	1	10

Criteria	Weight	Option 1	Option 2
		7 segment	Touchscreen
Price	3	0	0
Usability	2	0	++
Quality	1	0	0
Durability	1	0	0
Implementation	2	0	0
+		0	4
0		9	7
-		0	0
Total		9	11

Criteria	Weight	7-segment displays			Screen			Control		
		Option 1	Option 2	Option 3	Option 1	Option 2	Option 3	Option 1	Option 2	Option 3
		8 Digit 7-Segment LED Display – MAX7219	Max7219 8-digit Led Display 7 Segment	7 Segment Display - 4 Digits	Inch MEGA2560 Display Module HX8357B 480x320 TFT LCD Screen	MIKROE-495 MikroElektronika	Geekcreit® IIC I2C 2004 204	Digital Contacting Encoder	12mm Incremental Rotary Encoder PEC11 Series 2 Channel	Bourns PEC11R-4225F-S0012 Encoders
Price	3	-	-	+	+	-	+	-	+	+
Usability	2	0	0	0	+	+	-	0	0	0
Quality	1	-	-	-	+	+	0	+	-	+
Durability	1	0	0	0	0	0	0	+	0	0
Implementation	2	+	+	+	0	0	0	0	0	0
+		0	0	3	6	3	3	2	3	4
0		5	5	5	3	3	4	4	5	5
-		4	4	1	0	3	2	3	1	0
Total		1	1	7	9	3	5	3	7	9

- Touchscreen could perform complete interface but quadrature encoder adds ease of use and quick adjustment. Using both should be considered for best user function and experience.