

Description

The **ESUM** combines the quadrature outputs of two encoders into a single quadrature output. The output quadrature may be selected to be either the sum or difference of the two quadrature inputs. The index from encoder 0 is simply wired to the index of the output. The index from Encoder 1 is not used. Connectors are 5-pin positive finger-latching.

Applications for the **ESUM** include:

- Coarse and fine operator controls when one encoder is high resolution and the other is low resolution.
- Measuring the difference in position between 2 shafts with one encoder is mounted on each.
- Measuring dynamic coupling twist with one encoder mounted on each side of the coupling.

The **ESUM** functions by sampling the two encoder inputs, decoding the quadrature inputs into up/down signals, combining the up/down signals, and synthesizing new quadrature on the output. The sampling nature of the operation limits the maximum quadrature frequency to 46.8 kHz.

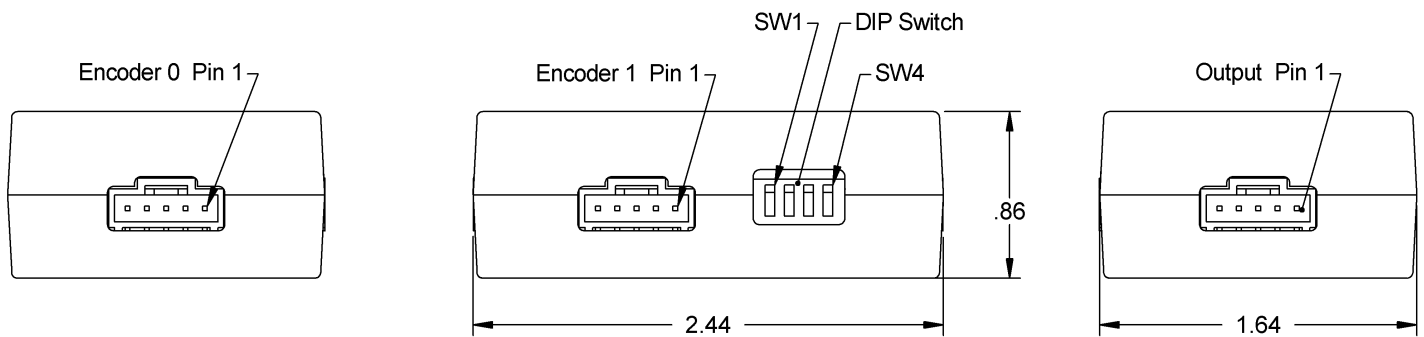
To use, simply place the **ESUM** in-line with the encoder cables. The **ESUM** derives its power from the +5V pin of the encoder cable. DIN rail mounting is available. Only SW1 effects the function of the ESUM. SW2, SW3 and SW4 are not used.



Features

- Fast hardware solution
- Obtains sum or difference of 2 encoder positions
- DIN rail mount option

Mechanical Drawing



Absolute Maximum Ratings

Parameter	Min.	Max.	Units
Storage Temperature	-40	100	C
Operating Temperature	0	70	C
Humidity (non-condensing)	0	95	%

Parameter	Min.	Max.	Units
Digital Inputs (diode clamped)	-0.6	5.6	V

Electrical

Parameter	Min.	Typ.	Max.	Units
Supply Voltage (Vcc)	4.75	5.0	5.25	V
Supply Current (no encoders)		120		mA
Input Low Voltage	0		0.8	V
Input High Voltage	2.0		Vcc	V
Output Low (8 mA current sink)			0.4	V
Output High (4 mA current source)	2.4			V
Max. Input Frequency			46.8	kHz
Max. Phase Delay			40	usec.

Pin-outs

Encoder 0 Input:

Pin	Description
1	Ground
2	Index
3	A channel
4	+5V out (direct connection to pin 4 of Output connector)
5	B channel

Encoder 1 Input:

Pin	Description
1	Ground
2	Index (value ignored)
3	A channel
4	+5V out (direct connection to pin 4 of Output connector)
5	B channel

Encoder Output:

Pin	Description
1	Ground
2	Index
3	A channel
4	+5V input
5	B channel

DIP Switch Settings

Switch	Description
1	switch down = sum (Encoder 0 + Encoder 1) switch up = difference (Encoder 0 - Encoder 1)
2	no function
3	no function
4	no function

Ordering Information

ESUM -

Mounting

D =Default

R =DIN rail (35mm wide)

Notes

- Cables and connectors are not included and must be ordered separately.
- US Digital warrants its products against defects in materials and workmanship for two years. See complete warranty for details.