

Description

The TTL outputs of some incremental encoders can sink (pull down) less than 4mA and source (pull up) less than 200uA. The **PC4** is a small, plug-in RS-422 cable driver board that drives long cables up to 1000 feet using differential signalling to provide improved noise immunity. The **PC4** can be used with the E2, E3, H1, H3, S1 and S2 encoders. Each board has a 5-pin socket designed to plug into the 5 pins of the encoder. An on-board 0.1uF bypass capacitor across the power pins on each of these boards compensates for inductance and noise which can be expected at the end of a long cable.

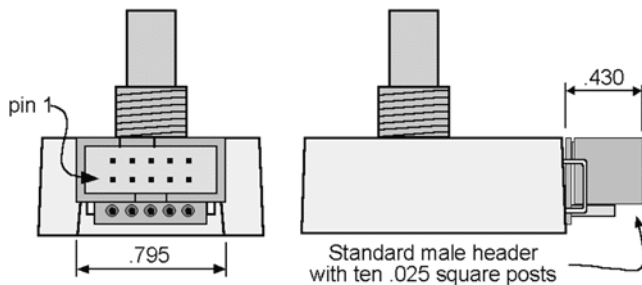
A ribbon or discrete wire cable connector can plug into the 10 pin shrouded plug on the output side of the **PC4**. Simple ribbon cables can be used for lengths up to 100 feet. Twisted pair cable is recommended for longer lengths. An optional terminating resistor may be placed across each pair on the receiver side of the cable as low as 270 Ω , matching the cable's characteristic impedance. When calculating the power requirements of the encoder side of the cable, include the current consumed by the module, the driver IC and any terminating resistors. Be sure to supply sufficient voltage to compensate for the voltage drop across the power and ground wires (round trip). The typical cable resistance for 28 AWG wire is 65 ohms per 1000 feet. If an RS-422 receiver chip such as 26C32 is used on the receiver side of the cable, we recommend a 0.1uF ceramic monolithic bypass capacitor across +5V and ground located within 1 inch of the receiver chip.



Mechanical

The cable drivers shown below are compatible only with the E2, E3, H1, H3, S1 and S2.

PC4 Differential cable driver board. (shown mounted on an **S1** encoder).



Electrical Characteristics

Parameter	Min.	Typ.	Max.	Units	Notes
Supply Voltage	4.5	-	5.5	Volts	-
Supply Current (26C31)	-	1	2	mA	-
Output High Voltage	2.5	-	-	Volts	IOH = 20 mA
Output Low Voltage	-	-	0.8	Volts	IOL = 20 mA
Propagation Time	-	-	15	ns	-
Electrostatic Discharge	-2	-	2	kV	Human Body Model

Absolute Maximum Ratings

Parameter	Min.	Max.	Units
Storage Temperature	-40	100	C
Operating Temperature	-40	100	C

Connectors

Product	Driver Header	Connector Mates With
PC4-H10	AMP# 103309-1	CON-C10*
PC4-H5	AMP# 640456-5	CON-C5*

* US Digital part number. For more information see the Cables / Connectors page.

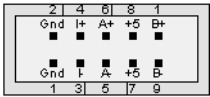
Pin-outs

PC4-H5 Output Connector



Pin	Description
1	Ground
2	Index
3	A channel
4	+5VDC power
5	B channel

PC4-H10 Output Connector



Pin	Description
1	Ground
2	Connected to pin 1
3	Index-
4	Index+
5	A- channel
6	A+ channel
7	+5VDC power
8	Connected to pin 7
9	B- channel
10	B+ channel

Note: For implementations with long cables the supply voltage at the host should be appropriately higher to compensate for voltage losses in the wires. Consider the power requirement of the encoder, the PC4 module and the optional termination resistors.

Ordering Information

PC4 -

Connector

H5 =

H10 =

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.