Description

Differential Cable Driver/Receiver:

The **EA-D-L-10-** is a differential RS-422 cable driver which converts the single-ended A/B/I output from USD's single-ended incremental encoders (or any three TTL level digital signals) to 3 pairs of differential signals. This allows the encoder to drive long cables (6 to 1000 ft.) and reduces false switching in noisy environments. Various connector options are available on the 5-pin input side of this adapter. The output differential signals are available on a male 10-pin finger-latching connector (FH10). The differential signal from the **EA-D-L-10-** can be connected directly to USD's PCI-3E-D, PCI-4E-D, USB4-D and AD4B-D interface products.

The corresponding receiver, **EA-R-L-10-** converts the received differential signals back to 3 single-ended TTL level digital signals. The differential input side of the receiver is a 10 pin male finger latching connector (FH10). Various connector options are available on the single ended 5-pin output side.

The **EA-D-H-10-** is the same as the **EA-D-L-10-**, but offers a wide operating voltage range of 9.5 to 32VDC and a large output voltage swing proportional to the power supply voltage. This adapter allows 5V encoders to be used in high voltage applications.

Single-ended Cable Driver:

The **EA-D-L-5-** driver converts 3 single-ended, low drive digital signals to 3 single-ended, high current drive digital signals. This variant is useful since the TTL outputs of some incremental encoders can sink (pull down) just under 4mA and source (pull up) only about 200 uA. The output side of the driver is a 5pin male finger latching connector (FH5). Various connector options are available on the single ended 5-pin input side.

The **EA-D-H-5-** is the same as the **EA-D-L-5-**, but offers a wide operating voltage range of 9.5 to 32VDC and a large output voltage swing proportional to the power supply voltage. The **EA-D-H-5-** allows 5V encoders to be used in high voltage applications.

The **EA-D-L-10-** and **EA-D-L-5-** cable drivers use an industry standard 26C31 driver chip. The **EA-D-H-10-** and **EA-D-H-5-** use the ET7272 driver chip. An on-board 0.1 microfarad bypass capacitor across the power pins on each of these adapters compensates for inductance and noise, which can be expected at the end of a long cable. The cable receivers use an industry standard 26C32 receiver chip.

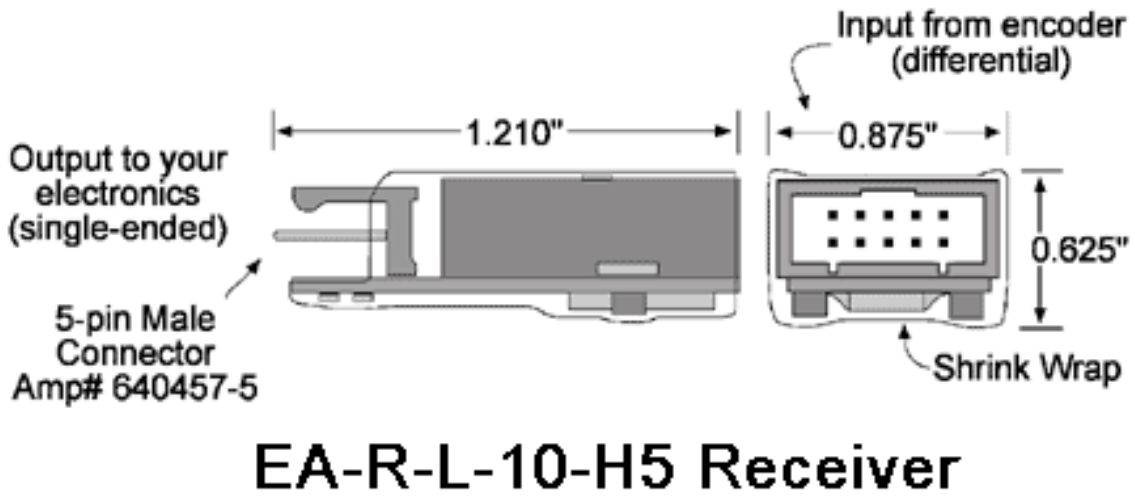
US Digital can supply nearly any cable to your specifications. See the Cables & Connectors page for more information.

Features

- Single-ended driver or differential driver/receiver available
- Three digital channels (A/B/I encoder signals) per adapter
- Variety of connector options
- Low cost

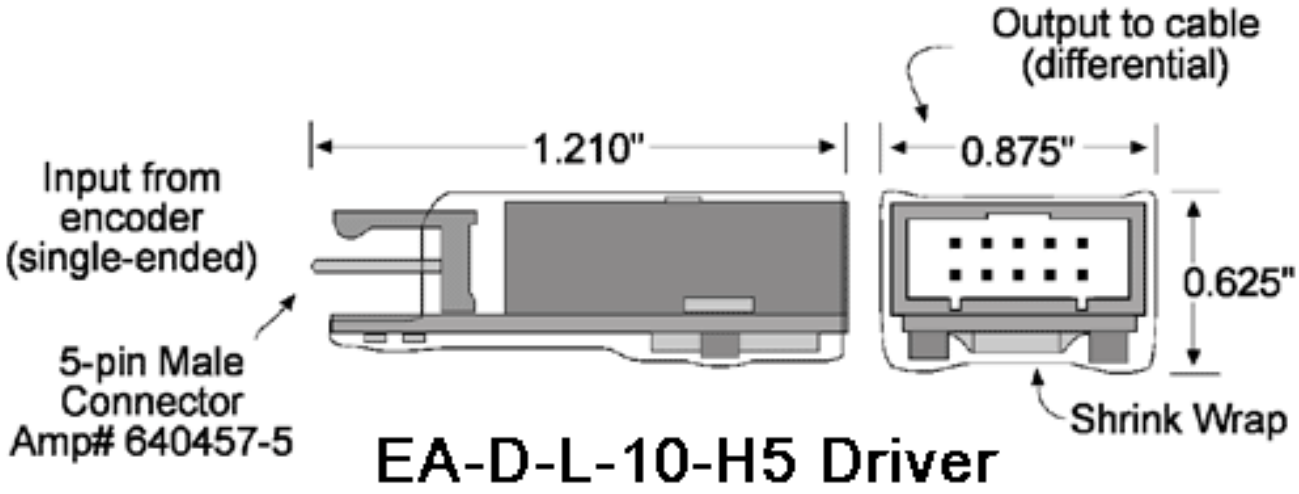
US DIGITAL
1400 NE 136th Avenue
Vancouver, Washington 98684, USA
info@usdigital.com
www.usdigital.com
Local: 360.260.2468
Toll-free: 800.736.0194

EA-R-L-10



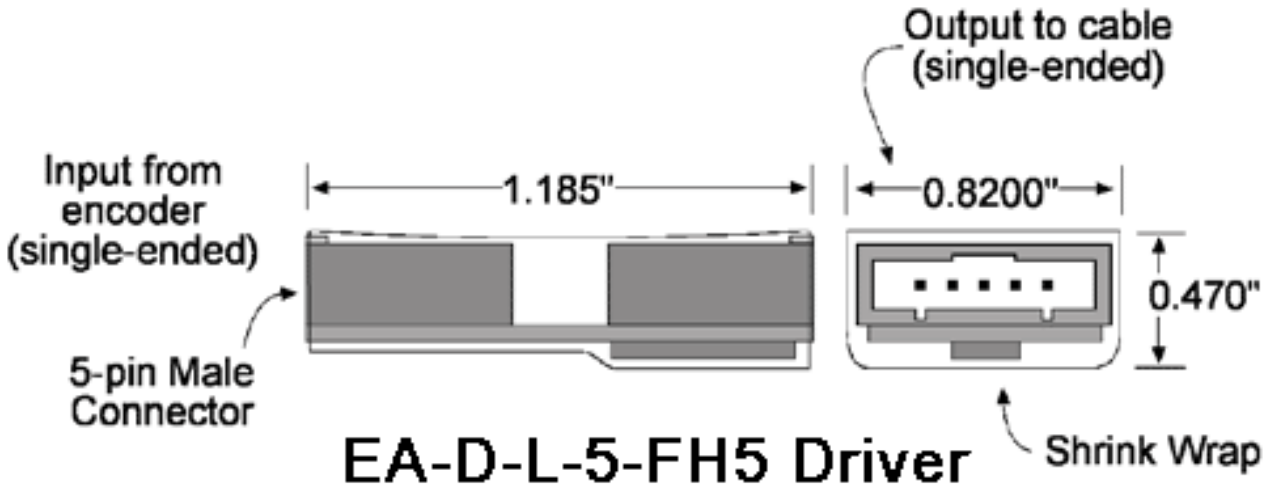
EA-R-L-10-H5 Receiver

EA-D-L-10

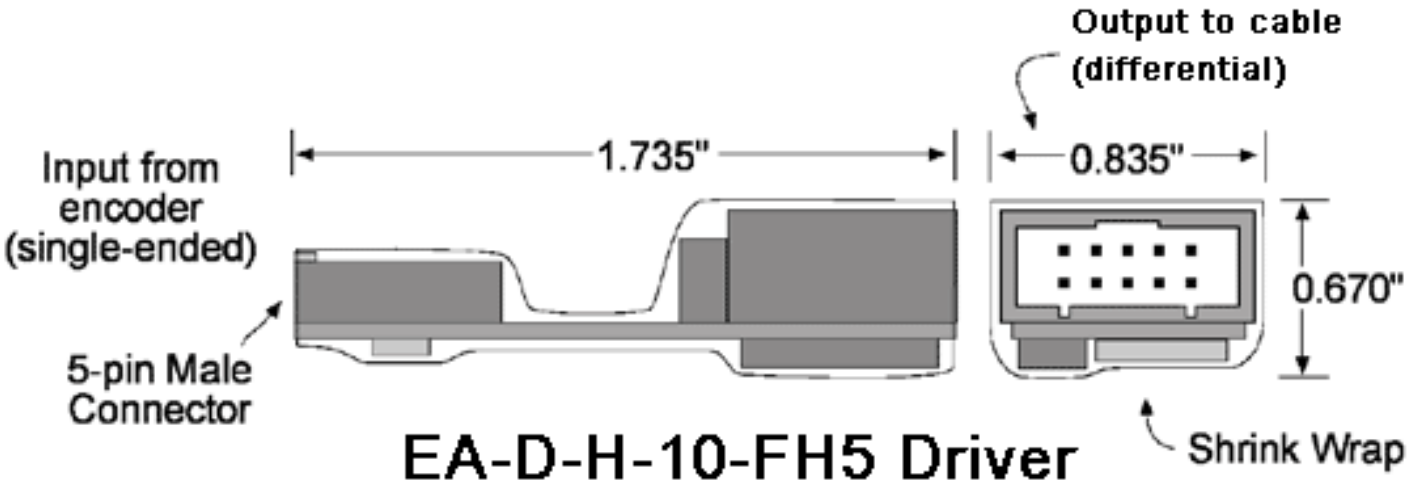


EA-D-L-10-H5 Driver

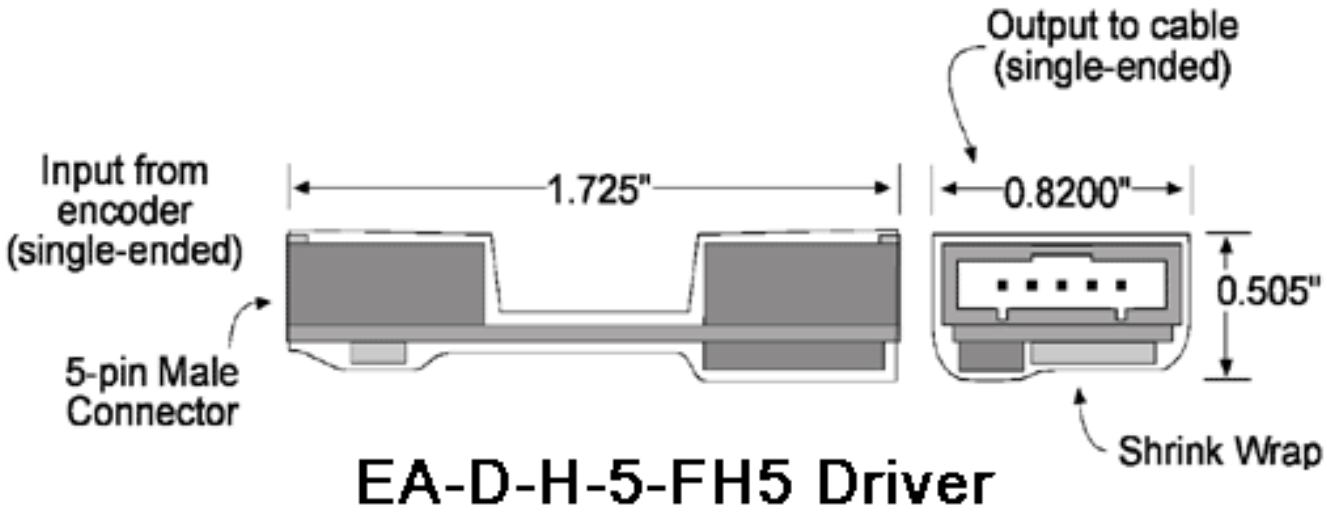
EA-D-L-5



EA-D-H-10



EA-D-H-5



Environmental

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

EA-D-L-5-, EA-D-L-10- Driver Electrical Characteristics

Parameter	Min.	Typ.	Max.	Units	Notes
Supply Voltage	4.5	-	5.5	Volts	-
Supply Current	-	4.5	9.0	mA	-
Output High Voltage	2.5	-	-	Volts	I(OH) = 20 mA
Output Low Voltage	-	-	0.8	Volts	I(OL) = 20 mA
Propagation Time	-	-	15	ns	-

EA-D-H-5-, EA-D-H-10- Driver Electrical Characteristics

Parameter	Min.	Typ.	Max.	Units	Notes
Supply Voltage (Vs)	7.5	-	30	Volts	-
Supply Current	-	-	10	mA	-

Parameter	Min.	Typ.	Max.	Units	Notes
Propagation Time	-	236	330	ns	-
Output Low Voltage			0.5	Volts	
Output High Voltage		Vs - 2.0		Volts	
Output Current Source/Sink		20		mA	
Output IC	-	-	-	-	ET7272

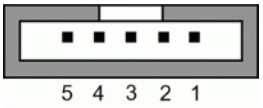
EA-R-L-10- Receiver Electrical Characteristics

Parameter	Min.	Typ.	Max.	Units	Notes
Supply Voltage	4.5	-	5.5	Volts	-
Supply Current	-	16	25	mA	-
Input High Voltage	2.0	-	-	Volts	I(OH) = 20 mA
Input Low Voltage	-	-	0.8	Volts	I(OL) = 20 mA
Propagation Time	-	-	35	ns	-

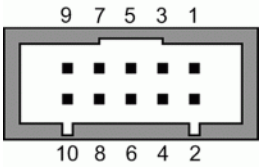
Driver (EA-D-) Pinout

For a Driver, the input connector is a 4-pin or 5-pin connector chosen from: H5, FH5, C5, FC5, LC5, MIC4, W5. See "4-pin, 5-pin C onnector Options" for pictures of the available connectors.
The output connector is either a 5-pin finger latching connector (FH5) or a 10-pin finger latching connector (FH10).

FH5 Output Connector:



FH10 Output Connector:



Pin	Input 4-pin Connector (MIC4)	Input 5-pin Connector (H5, FH5, C5, FC5, LC5, W5)	EA-D-L-5-/EA-D-H-5- Output 5-pin Connector (FH5)	EA-D-L-10-/EA-D-H-10- Output 10-pin Connector (FH10)
1	+5VDC power	Ground	Ground	Ground

Pin	Input 4-pin Connector (MIC4)	Input 5-pin Connector (H5, FH5, C5, FC5, LC5, W5)	EA-D-L-5-/EA-D-H-5- Output 5-pin Connector (FH5)	EA-D-L-10-/EA-D-H-10- Output 10-pin Connector (FH10)
2	A channel (in)	Index (in)	Index (out)	Ground
3	Ground	A channel (in)	A channel (out)	Index- (out)
4	B channel (in)	+5VDC power	+5VDC power +7.5 to +30VDC power in (EA-D-H-5- only)	Index+ (out)
5		B channel (in)	B channel (out)	A- channel (out)
6				A+ channel (out)
7				+5VDC power +7.5 to +30VDC power in (EA-D-H-10- only)
8				+5VDC power +7.5 to +30VDC power in (EA-D-H-10- only)
9				B- channel (out)
10				B+ channel (out)

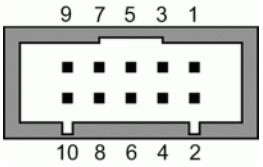
Notes:

(1) For the Low voltage (EA-D-L-) versions, the +5VDC pins on the input and output connectors are electrically connected together, so power can be applied on either the input or output connector. For the High voltage (EA-D-H-) versions, the 7.5 to 30VDC power is applied at the OUTPUT connector. +5V out is generated at the INPUT connector.

Receiver (EA-R-) Pinout

For a Receiver, the input connector is always a 10-pin finger latching connector (FH10). The output connector is a 5-pin connector chosen from: H5, FH5, C5, FC5, LC5, W5. See "4-pin, 5-pin Connector Options" for pictures of the available connectors.

FH10 Input Connector



Pin	Input 10-pin Connector (FH10)	Output 5-pin Connector (H5, FH5, C5, FC5, LC5, W5)
1	Ground	Ground

Pin	Input 10-pin Connector (FH10)	Output 5-pin Connector (H5, FH5, C5, FC5, LC5, W5)
2	Ground	Index (out)
3	Index- (in)	A channel (out)
4	Index+ (in)	+5VDC power
5	A- channel (in)	B channel (out)
6	A+ channel (in)	
7	+5VDC power	
8	+5VDC power	
9	B- channel (in)	
10	B+ channel (in)	

Notes:

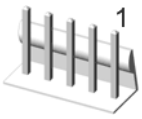
(1) The +5VDC pins on the input and output connectors are electrically connected together, so power can be applied on either the input or output connector.

4-pin, 5-pin Connector Options

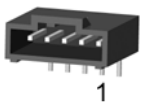
Connector	Description
H5	5-pin right-angle male header soldered in place.
FH5	5-pin finger-latching header soldered in place.
W5	Five 12" discrete wires, no connector on the end.
C5	Five 6" discrete wires with a standard mating connector on the end.
LC5	Five 6" discrete wires with a locking mating connector on the end.
FC5	Five 6" discrete wires with a finger-latching mating connector.
MIC4	Four 6" discrete wires with a micro mating connector.

W5

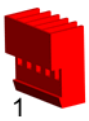
H5



FH5



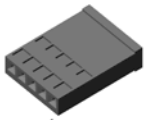
C5

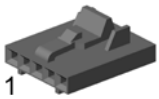


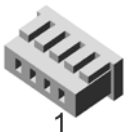
LC5

FC5

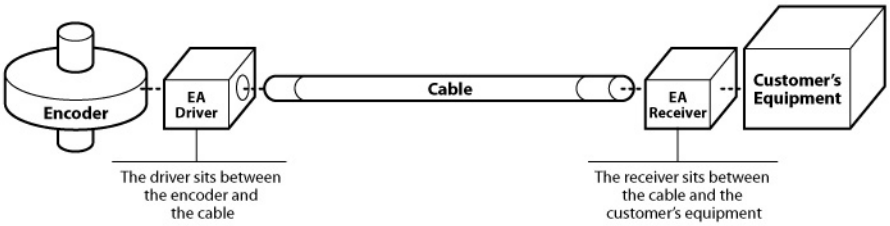
MIC4


1


1


1

Driver Vs. Receiver



Ordering Information

EA - [ ] - [ ] - [ ] - [ ]

Type	Voltage	Connector A	Connector B
D =***Driver*** *Conn. A: Output Conn. B: Input*	L =*Low*	5 =*FH5 (5-Pin)*	H5
R =***Receiver*** *Conn. A: Input Conn. B: Output*	H =*High*	10 =*FH10 (10-Pin)*	FH5
			C5
			FC5
			LC5
			MIC4
			W5

Rules

- Voltage must be equal to L when Type is R
- Connector A must be equal to 10 when Type is R
- Connector B must be something other than MIC4 when Type is R

Notes

- US Digital warrants its products against defects in materials and workmanship for two years. See complete warranty for details.

Base Pricing

Quantity	Price
1	$11.55
10	$11.20
50	$10.80
100	$10.50

- Add 20% per unit for **Connector A** of FH10 (10-Pin)
- Add $2.00 per unit for **Connector B** of C5
- Add $4.00 per unit for **Connector B** of FC5 , LC5 , MIC4
- Add $22.00 per unit for **Type** less than or equal to D if **Voltage** is H.
- Add $4.00 per unit for **Type** less than or equal to D if **Connector** is MIC4.

US DIGITAL
1400 NE 136th Avenue
Vancouver, Washington 98684, USA
info@usdigital.com
www.usdigital.com
Local: 360.260.2468
Toll-free: 800.736.0194