








Overview: Angst+Pfister Kit Encoders

Avago Compatibility: see following pages

Series	E2	E5	E6	E16	E4T	E8T	PS20A	PS28A PS28B	PS40A PS40B	M3K (Magnetic)
										
Type	Incremental	Incremental	Incremental	Incremental	Incremental	Incremental	Incremental	Incremental	Incremental	Incremental, PWM
Dimensions [mm]	36 x 30 x 17	52 x 31 x 17	76 x 56 x 16	Ø16 x 9	Ø22 x 11	Ø29 x 12	Ø20 x 13	Ø28 x 18	Ø40 x 21	Ø16 x 22
Op. Temp [°C]	-20 to 100	-20 to 100	-20 to 100	-40 to 100	-20 to 100	-20 to 100	-20 to 85	-20 to 85 (A, B) -40 to 100 (C)	-20 to 85	-40 to 100
Power supply	5 VDC	5 VDC	5VDC	5VDC	5VDC	5VDC	5VDC	5VDC	5VDC, 24VDC	4 - 16 VDC
Cycles / Rotation [CPR]	32 - 5'000	32 - 5'000	64 - 10'000	250 - 4096	100 - 1000	180 - 720	200 - 2'048	200 - 2'500 (A) 2'000 - 10'000 (B) 200 - 4'096 (C)	200 - 4'096 (A) 2500 - 16'384 (B)	1 - 8'192
Bore diameter [mm]	2, 4, 5, 6, 7, 8, 10	2, 4, 5, 6, 7, 8, 10	3, 4, 5, 6, 8, 10, 12, 14, 25	1.5, 2	2, 2.3, 2.5, 3, 4, 5, 6	3, 4, 5, 6, 7, 8	3, 4	4, 5, 6, 6.35	5, 6, 6.35, 8	2, 2.3, 2.5, 3, 4, 5, 6
Bore diameter [inches]	1/8, 3/16, 1/4, 5/16, 3/8	1/8, 3/16, 1/4, 5/16, 3/8	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1		1/8, 3/16, 1/4	1/8, 1/4, 3/8		1/4	1/4	1/8, 3/16, 1/4
Bolt circle [mm]	19.0, 20.9, 46.0(*)	19.0, 20.9, 46.0(*)	19.0, 20.9, 32.5, 46.0(*)	10	14.9	19.0, 32.5(*)	15	20, 34(*)	31, 46(*)	14.9, 19.0
Mount. Ears (*)										
Index	X	X	X	X			X	X	X	X
Differential output		X	X		X	X	X	X	X	
Push-pull output									X	
Output format	quadrature	quadrature	quadrature	quadrature	quadrature	Quadrature	Quadrature	Quadrature	Quadrature	quadrature, PWM

See next side for disks, linear strips and optical detectors

Overview: Disks, Linear Strips and Optical detectors Broadcom / Avago Compatibility: see following pages

	Transmissive Disks				Optical Detector		Transmissive Linear strip	length
	DISK-1	HUBDISK-1	DISK-2	HUBDISK-2	EM1	EM2	LIN	
Outer Diameter	1" (25.4mm)	1" (25.4mm)	2" (50.8mm)	2" (50.8mm)			1" to 35.5" (90cm)	
Inner Diameter	0.93" to 0.441"	2mm to 10mm	0.93" to 1.0"	2mm to 25.4mm				
								
CPR	32 to 1'250	32 to 1'250	64 to 2'500	64 to 2'500	32 to 2'500		120 to 500	LPI
Op. Temperature [°C]	-40 to 100	-40 to 100	-40 to 100	-40 to 100	-40 to 125		-40 to 100	[°C]
CPR	2'000 to 5'000	2'000 to 5'000	3'600 to 10'000	3'600 to 10'000		1'000 to 10'000	1'000 and 2'000	LPI
Op. Temperature [°C]	-40 to 100	-40 to 100	-40 to 100	-40 to 100		-25 to 100	-40 to 100	[°C]

Custom Disks: 1270 LPI -40 to 125°C

Technolgy	Reflective or Transmissive	Substrate thickness	Bar Accuracy
High reflection (>95%) Aluminium	R	0.5 mm	<0.003 mm
Polycarbonate	T	0.25 to 2.0 mm	<0.003 mm
Soda Lime glass	R and T	0.55 / 1.1 mm	<0.003 mm

Broadcom / Avago Compatibility HEDL-5XXX --> US Digital E5

HEDL-5500, HEDL-5505, HEDL-5540, HEDL-5545, HEDL-5600, HEDL-5605, HEDL-5640, HEDL-5645.

Part Number Comparison

In order for the E5D to be fully compatible with the HEDL-5XXX, CA-C10-F-C10 must also be ordered separately

Avago / Agilent / HP Part Number

HEDL-5 ? ? ? - ? ?

US Digital Part Number

E5 - X - X - X - L - X - X - B

Mounting Type			
	Avago	US Digital	Description
<input type="radio"/>	5	D	Standard
<input type="radio"/>	6	G	Mounting Ears
Outputs			
	Avago	US Digital	Description
<input type="radio"/>	0	NE	A + B
<input type="radio"/>	4	IE	A + B + I
Through Hole			
	Avago	US Digital	Description
<input type="radio"/>	0	D	No Hole
<input type="radio"/>	5	H	Hole In Cover

Resolution (CPR)			
	Avago	US Digital	Description
<input type="radio"/>	S	50	50
<input type="radio"/>	K	96	96
<input type="radio"/>	C	100	100
<input type="radio"/>	D	192	192
<input type="radio"/>	E	200	200
<input type="radio"/>	F	256	256
<input type="radio"/>	G	360	360
<input type="radio"/>	H	400	400
<input type="radio"/>	A	500	500
<input type="radio"/>	I	512	512

Shaft Diameter			
	Avago	US Digital	Description
<input type="radio"/>	01	079	2mm
<input type="radio"/>	02	118	3mm
<input type="radio"/>	03	125	1/8"
<input type="radio"/>	04	156	5/32"
<input type="radio"/>	05	188	3/16"
<input type="radio"/>	06	250	1/4"
<input type="radio"/>	11	157	4mm
<input type="radio"/>	12	236	6mm
<input type="radio"/>	13	315	8mm
<input type="radio"/>	14	197	5mm

Broadcom / Avago Compatibility HEDL-65XX

--> US Digital E6

HEDL-6500, HEDL-6505, HEDL-6540, HEDL-6545.

Part Number Comparison

In order for the E6 to be fully compatible with the HEDL-5XXX, CA-C10-F-C10 must also be ordered separately

Avago / Agilent / HP Part Number

HEDL-65 ? ? - ? ?

US Digital Part Number

E6- x - x - x - L - x - D - B

Output			
	Avago	US Digital	Description
○	0	NE	A, - _l , B, b
○	4	IE	A, - _l , B, b, l, - _l
Through Hole			
	Avago	US Digital	Description
○	0	D	No Hole
○	5	H	Hole In Cover
Resolution (CPR)			
	Avago	US Digital	Description
○	A	500	500
○	B	1000	1000
○	J	1024	1024

Shaft Diameter			
	Avago	US Digital	Description
○	05	188	3/16"
○	06	250	1/4"
○	07	312	5/16"
○	08	375	3/8"
○	09	500	1/2"
○	10	625	5/8"
○	11	157	4mm
○	12	236	6mm
○	13	315	8mm

Broadcom / Avago Compatibility HEDM-5X0X

--> US Digital E2

HEDM-5500, HEDM-5505, HEDM-5600, HEDM-5606.

Part Number Comparison

Avago / Agilent / HP Part Number

HEDM-5 ? 0 ? - ? ?

US Digital Part Number

E2- x - x - NE - x - x - B

Mounting Type			Shaft Diameter				
	Avago	US Digital	Description		Avago	US Digital	Description
○	5	D	Standard	○	01	079	2mm
○	6	G	Mounting Ears	○	02	118	3mm
Through Hole				○	03	125	1/8"
				○	04	156	5/32"
○	0	D	No Hole	○	05	188	3/16"
○	5	H	Hole In Cover	○	06	250	1/4"
Resolution (CPR)				○	11	157	4mm
				○	12	236	6mm
○	8	1000	1000	○	13	315	8mm
○	6	1024	1024	○	14	197	5mm

Broadcom / Avago Compatibility HEDS-5XXX --> US Digital E2

HEDS-5500, HEDS-5505, HEDS-5540, HEDS-5545, HEDS-5600, HEDS-5605, HEDS-5640, HEDS-5645.

Part Number Comparison

Avago / Agilent / HP Part Number

HEDS-5 ? ? ? - ? ?

US Digital Part Number

E2- X - X - X - X - X - B

Mounting Type			
	Avago	US Digital	Description
○	5	D	Standard
○	6	G	Mounting Ears
Outputs			
	Avago	US Digital	Description
○	0	NE	A + B
○	4	IE	A + B + I
Through Hole			
	Avago	US Digital	Description
○	0	D	No Hole
○	5	H	Hole In Cover

Resolution (CPR)			
	Avago	US Digital	Description
○	S	50	50
○	K	96	96
○	C	100	100
○	D	192	192
○	E	200	200
○	F	256	256
○	G	360	360
○	H	400	400
○	A	500	500
○	I	512	512

Shaft Diameter			
	Avago	US Digital	Description
○	01	079	2mm
○	02	118	3mm
○	03	125	1/8"
○	04	156	5/32"
○	05	188	3/16"
○	06	250	1/4"
○	11	157	4mm
○	12	236	6mm
○	13	315	8mm
○	14	197	5mm

Broadcom / Avago HEDS to US Digital EM1 Module Compatibility Guide

Avago Module	2 Inch	1 Inch	Linear	EM1 Part Number
HEDS-9000#A00	500			EM1-2-500-N
HEDS-9000#B00	1000			EM1-2-1000-N
HEDS-9000#J00	1024			EM1-2-1024-N
HEDS-9000#T00	2000			EM1-2-2000-N
HEDS-9000#U00	2048			EM1-2-2048-N
HEDS-9040#B00	Index 1000			EM1-2-1000-I
HEDS-9040#J00	Index 1024			EM1-2-1024-I
HEDS-9100#A00		500		EM1-1-500-N
HEDS-9100#B00		1000		EM1-1-1000-N
HEDS-9100#C00		100		EM1-1-100-N
HEDS-9100#E00		200		EM1-1-200-N
HEDS-9100#F00		256		EM1-1-250-N
HEDS-9100#G00		360		EM1-1-360-N
HEDS-9100#H00		400		EM1-1-400-N
HEDS-9100#I00		512		EM1-1-512-N
HEDS-9100#J00		1024		EM1-1-1024-N

Avago Module	2 Inch	1 Inch	Linear	EM1 Part Number
HEDS-9140#A00		Index 500		EM1-1-500-I
HEDS-9140#C00		Index 100		EM1-1-100-I
HEDS-9140#E00		Index 200		EM1-1-200-I
HEDS-9140#F00		Index 256		EM1-1-250-I
HEDS-9140#G00		Index 360		EM1-1-360-I
HEDS-9140#H00		Index 400		EM1-1-400-I
HEDS-9140#I00		Index 512		EM1-1-512-I
HEDS-9140#B00		Index 1000		EM1-1-1000-I
HEDS-9040#T00	Index 2000			EM1-2-2000-I
HEDS-9200#300			300	EM1-0-300-N
HEDS-9200#360			360	EM1-0-360-N
HEDS-9100#S00			50	EM1-1-50-N
HEDS-9140#S00		Index 50		EM1-1-50-I

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