

- Optocouplers

- Industrial Fiber

- Encoders

Upgrade Your Design

New Packages
More Features
Better Performance

Competitor Parts	Existing Parts	Upgrade Part	Upgrade Features	Footprint Information
Gate Drive				
TLP358F TLP350F FOD3120T PS9552L1/L2	HCNW3120 ACNW3190 ACNW3150	ACNW3430 ACNW3410 ACNU-3430 ACNU-3410	<ul style="list-style-type: none"> Up to 5A max. peak output current Very High CMR (100kV/μs) UVLO with VE reference for negative power supply Low Propagation Delay (<150ns) 40% smaller 11mm SS08 package (ACNU) 	Pin layout change Smaller footprint
TLP350, TLP354/5774/5752/5772, TLP3592/5954, TLP35832 FOD3120, PS9552, PS9505, V03120 LTV-3120, LTV343W S1826x UC2C3513/2351x, UC3530S8/53905C 1ED1x0x12AH, 1ED1x012MH NCD57090E	ACPL-1350 ACPL-1313 ACPL-1312 HCPL-3120 HCPL-3180 ACPL-H312/K312	ACPL-3161 ACPL-H342/ACPL-K342 ACPL-P341/ACPL-W341 ACPL-P343/ACPL-W343 ACPL-W346/ACPL-P346 ACPL-P349/ACPL-W349	<ul style="list-style-type: none"> Up to 10A max. peak output current (ACPL-3161) Rail-to-Rail output voltage Integrated Active Miller Clamp (ACPL-x342) Lower Propagation Delay Anti-Cross conduction Very High CMR (up to 100kV/μs) 	Smaller footprint
UC21540/21530/21520 S18237x/8239x ADuM4223/, NCP51561 ZEDS8265H	HCPL-315J/314J	ACFJ-3262 ACPL-W345 x2pcs	<ul style="list-style-type: none"> 0.8A max. peak output current UVLO protection Low propagation delay (<120ns) Rail-to-rail output 	Pin layout change
TLP351, TLP701/705, TLP35701/5715/5771/5951 FOD3181, FOD8314, PS9506, PS9306 S1826x	HCPL-0302 HCPL-0314 HCPL-1314 HCPL-3150/3140 ACPL-P302/W302 ACPL-P314/W314	ACPL-P340/ACPL-W340 ACPL-P345/ACPL-W345 ACPL-P347/ACPL-W347 ACFJ-3262/ACPL-W345x2pcs ACFJ-332B*	<ul style="list-style-type: none"> 4.0A max. peak output current UVLO protection Low propagation delay (<65ns) Rail-to-rail output 	Pin layout change
TLP5212/5214/5222/5231, FOD8316, FOD8318, FOD8332, FOD8333, PS9402 S18285/86, ADuM4136/4135, ISO5451/5452/5500/5851/5852 UC21710/21750 1ED02012 NCD57000/57001	HCPL-316J ACPL-330J ACPL-333J ACPL-331J ACPL-332J	ACPL-355JC ACPL-352J	<ul style="list-style-type: none"> 10A max. peak output current (ACPL-355JC) High working insulation voltage of 2262V_{peak} (ACPL-355JC) 5A max. peak output current (ACPL-352J) Rail-to-rail dual output Low propagation delay (<150 ns) SiC/GaN MOSFET ready Functional safety reporting Integrated active Miller clamp 	Pin layout change
		ACFJ-3405*	<ul style="list-style-type: none"> 12A max. peak output current 2-Level output for slew rate control Adaptive DESAT blanking Functional safety reporting 	Pin layout change
		ACPL-302J	<ul style="list-style-type: none"> Integrated DC-DC Controller for Floating power supply Rail-to-Rail output voltage DESAT and UVLO detection with isolated fault feedback Integrated Active Miller Clamp 	Pin layout change
		ACPL-337J ACPL-336J ACPL-335J (Power MOSFET)	<ul style="list-style-type: none"> Up to 4A max. peak output current Rail-to-Rail output voltage DESAT and UVLO detection with isolated fault feedback Integrated Active Miller Clamp 	Pin layout change
		ACPL-339J	<ul style="list-style-type: none"> Dual Output drive for external NMOS and PMOS buffer Integrated DESAT Detection Fault + UVLO status feedback 	Pin layout change
		ACPL-334J ACPL-338J	<ul style="list-style-type: none"> ACPL-334J, drop-in replacement for ACPL-331J/ACPL-332J ACPL-338J (auto-reset), drop-in replacement for ACPL-330J/ACPL-333J 3A max. peak output current Rail-to-rail output Low propagation delay (<135 ns) -40°C to +125°C operating temperature range 	Drop-in replacement
PS99005 UC53x0	ACNT-H313 HCNW3120 ACNW3130	ACNT-H343	<ul style="list-style-type: none"> Market highest insulation voltage 2262V_{peak} 15mm creepage in compact Stretched S08 Up to 5A max. peak output current Very High CMR (100kV/μs) UVLO with VE reference for negative power supply Low Propagation Delay (<150ns) 	Smaller footprint

* Advanced information, subject to change

Competitor Parts	Existing Parts	Upgrade Part	Upgrade Features	Footprint Information
Digital Optocouplers (Low Power \leq 1MBd)				
FODM453 TLP109, TLP112, TLP114 PS8101, PS8821, PS9113, PS9122, PS9123	6N135/6N136 HCPL-05xx HCPL-253x	ACPL-MS0L/ACPL-MS1L ACPL-W50L	<ul style="list-style-type: none"> • Low forward current (IF > 3 mA min) • High CTR ratio >90% min @ IF = 3 mA • Wide temperature range (-40°C to 105°C) • Wide supply voltage (2.7 V to 24 V) 	Smaller footprint
	HCPL-x53x	ACPL-054L	<ul style="list-style-type: none"> • Low supply voltage down to 2.25V and 4-pin configurable (ACPL-MS1L) • Excellent CMR performance 15kV/μs @ Vcm 1500V 	Drop-in replacement
TLP714F, TLP719F PS8302, PS9313 CNY64, VOW13x / VOW2611	HCPL-053x HCPL-253x HCNW135/136	ACPL-K54L ACNU-250L	<ul style="list-style-type: none"> • Offer higher working insulation voltage 1140V_{FEAK}¹ isolation Voltage, 5000 Vrms (ACPL-W50L/K54L) • Wider 11mm creepage and 10.5 mm clearance • Wider Operating Temperature up to 105°C • Lower supply voltage at 3.3V • Higher CMR 	Smaller footprint
TLP2303, TLP2403 HCPL273x, MCL273x	HCPL-270x/4701 HCPL-273x/4731	ACPL-K70A ACPL-K73A	<ul style="list-style-type: none"> • Wider 8mm creepage/ clearance • Wider Operating Temperature up to 105°C 	Pin layout change
CNY65/OP125/126/OP1264C		ACNT-H511/H51C	<ul style="list-style-type: none"> • Ease of mounting (SMT package) • Smaller package size • Tighter guaranteed electrical specifications • Excellent CMR noise immunity • High CTI 600V (ACNT-H51C) • 15mm creepage in compact Stretched S08 	Smaller footprint

Green Energy Conversion
Protect with Broadcom Optocouplers



Competitor Parts	Existing Parts	Upgrade Part	Upgrade Features	Footprint Information
Low Power SMBd				
SFH67201, SFH6721, TLP105, TLP2355, TLP2105, TLP2405	HCPL-0201/0211	ACPL-M21L ACPL-021L	<ul style="list-style-type: none"> • Low Forward Current (IF@1.6mA min), allowing direct drive from microcontroller without an input buffer • Low Supply Current (IDD@1.1mA max.) • Low Supply Voltages (VDD @ 2.7 – 5.5V), with support to go lower to 2.5V 	Smaller footprint Drop-in replacement
	HCPL-220x/221x	ACPL-W21L		Smaller footprint
SFH6731, SFH6732	HCPL-223x	ACPL-024L ACPL-K24L	<ul style="list-style-type: none"> • S05 package to reduce PCB board space and cost • Min CMR at 25kV/µs @ Vcm 1000V to preserve data integrity under noisy environment • Wide Temperature range (-40°C to 105°C) 	Smaller footprint
Ultra Low Power 10MBd				
FODM8061 TLP2361, TLP2366, TLP2468, TLP2160, TLP2161	HCPL-M6xx	ACPL-M61L/ACPL-M62L APL-M61M	<ul style="list-style-type: none"> • More than 80% power saving. • Low forward current (IF) to allow direct drive from microcontroller. • Wide temperature range (-40°C to 105°C). • Wider supply voltage (2.5V-5.5V). • CMOS output to eliminate pull-up resistor. • Open-drain output (ACPL-M62L) 	Drop-in replacement
	HCPL-060x	ACPL-061L		Drop-in replacement
	HCPL-061x			Drop-in replacement
	HCPL-063x HCPL-0661	ACPL-064L		Drop-in replacement
FOD8163T TLP2768F, TLP2766F PS9524L2	HCPL-260x	ACPL-W61L/ACPL-C61L	<ul style="list-style-type: none"> • Market highest insulation voltage 2262V_{PEAK} • 15mm creepage in compact Stretched S08 • High transient overvoltage 12,000V_{PEAK} • Lowest power consumption <20mW • High CTI (ACNT-H61LC) 	Smaller footprint
	HCPL-261x			Smaller footprint
	ACPL-W611			Smaller footprint
	ACPL-W60L			Smaller footprint
	ACPL-P611			Smaller footprint
	HCPL-263x	ACPL-K64L		Smaller footprint
	ACPL-K63L			Smaller footprint
	HCPL-4661			Smaller footprint
	ACPL-W60L/W611/ P611, 6N137, HCPL- 260L/2601/2611, HCPL-261A/261N			ACPL-C61L ACPL-W61L
FOD8160 PS9924	HCNW137/2601/2611 ACNW261L ACNW2601	ACNW261L	<ul style="list-style-type: none"> • Market highest insulation voltage 2262V_{PEAK} • 15mm creepage in compact Stretched S08 • High transient overvoltage 12,000V_{PEAK} • Lowest power consumption <20mW • High CTI (ACNT-H61LC) 	Drop-in replacement
		ACNT-H61L / H61LC		Stretched S08 package
PS9351L2, PS9309L2, TLP2766F, TLP2768F x 2	ACPL-W61L x2	ACFL-6211U/ACFL-6212U	<ul style="list-style-type: none"> • Compact size in fine-pitch (0.8mm) in Stretched S012 package, reducing PCB Board space • Extended Temperature range up to 125°C • Bi-directional Feature 	Smaller footprint
High Speed Family (>12.5MBd)				
	HCPL-0708	ACPL-071L	<ul style="list-style-type: none"> • Flexible supply voltages (3.3V/5V) • Lower Propagation Delay (<40ns) • Wide temperature (-40°C to 105°C) • Glitch-Free Output 	Drop-in replacement
	HCPL-0738	ACPL-074L ACPL-074N*		
	HCPL-0708	ACPL-M75L ACPL-M75N	<ul style="list-style-type: none"> • Flexible supply voltages (3.3V/5V) • Lower Propagation Delay (<40ns) • Wide temperature (-40°C to 125°C) • Glitch-Free Output • Lower power consumption 1.5mA(max) • Higher CMR 30kV/µs 	Smaller footprint
	HCPL-2400	ACPL-W70L ACPL-W70N*	<ul style="list-style-type: none"> • Flexible supply voltages (3.3V/5V) • Lower Propagation Delay (<55ns) • Wide temperature up to (-40°C to 125°C) • Smaller 8mm C/C package (Stretched S08) • Glitch-Free Output. 	Smaller footprint
	HCPL-2430	ACPL-K73L ACPL-K73N*	<ul style="list-style-type: none"> • Flexible supply voltages (3.3V/5V) • Lower Propagation Delay (<55ns) • Wide temperature up to (-40°C to 125°C) • Glitch-Free Output 	Smaller footprint
FOD0720, FOD8012A	HCPL-0710/20/21 ACPL-072L	ACPL-077L ACSL-7210	<ul style="list-style-type: none"> • Flexible supply voltages (3.3V/5V) • Wide temperature (-40°C to 105°C) • Lower PWD (<6ns) (ACPL-077L) • 3.75kViso Bi-directional in <2mm low height (ACSL-7210) 	Drop-in replacement for ACPL-077L
	HCPL-7710/20/21	ACPL-772L		Smaller footprint in dual-channel Bi-directional (ACSL-7210)

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Competitor Parts	Existing Parts	Upgrade Part	Upgrade Features	Footprint Information
Isolation Amplifier				
AMC1204/B, AMC1305M25 AD7401, AD7403	HCPL-786x	ACPL-796J	<ul style="list-style-type: none"> External docking (up to 20MHz) for multichannel synchronization 16 bits resolution no missing codes (12 bits ENOB) 80db SNR (typ) 200mV linear range 	50-16 footprint
AMC1305L25 AD7405		ACPL-798J	<ul style="list-style-type: none"> Up to 25MHz external clocking LVDS clock and data interface 16 bits resolution no missing codes (12 bits ENOB) 82db SNR (typ) 200mV linear range 	
AMC1203/B AD7400/A, AD7402, AMC1303M2510, Si8946B TLP7830	HCPL-7860 ACPL-C797 ACPL-7970	ACPL-C799 / ACPL-C740	<ul style="list-style-type: none"> +/-50mV / +/-200mV linear range 10MHz / 20MHz internal clock 16 bits resolution no missing codes (12 bits ENOB) 77db / 86db SNR (typ) 1.3uV / °C offset drift (max.) 3V to 5.5V wide supply range for digital interface 	Smaller footprint
Si8936B		ACPL-C877	<ul style="list-style-type: none"> 0-2V linear range 10MHz internal clock 1Gohm high input impedance 16 bits resolution no missing codes (10 bits ENOB) 76dB SNR (typ) 3V to 5.5V wide supply range for digital interface 	Smaller footprint
AMC1200/B TLP7820, TLP790 Si8920 PS8551	HCPL-7800 HCPL-7800A HCPL-7840 ACPL-C78x	ACPL-C798, ACPL-C79A, ACPL-C790 ACPL-790B, ACPL-790A, ACPL-7900	<ul style="list-style-type: none"> +/-0.5%/ 1%/ 3% gain accuracy 0.05% excellent linearity 30% smaller package size 8 mm Creepage and Clearance 1414V_{ESD} working insulation voltage 	Smaller footprint
ISO122 AMC1200/B TLP7820		ACPL-C87A ACPL-C87B ACPL-C870	<ul style="list-style-type: none"> 0-2V input range voltage sensor +/-0.5%/ 1%/ 3% gain accuracy -35 ppm/°C Low Gain Drift -0.3 mV Input Offset Voltage 3 V to 5.5 V Wide Supply Range for Output Side 	Smaller footprint
		HCPL-788J / HCPL-785J	<ul style="list-style-type: none"> Output voltage directly compatible with A/D Converters Short circuit and overload detection 1µV / °C offset drift +/- 3%/ 5% gain accuracy 	50-16 footprint
		HCPL-7510	<ul style="list-style-type: none"> +/-3% gain accuracy Single-ended amplifier output for low power application 	Smaller footprint
		HCPL-7520	<ul style="list-style-type: none"> +/-5% gain accuracy Single-ended amplifier output for low power application 	Smaller footprint
AMC1201/B TLP7820 Si8920	ACPL-C790 ACPL-C79A ACPL-C79B	ACNT-H79A ACNT-H790 ACNT-H79B	<ul style="list-style-type: none"> Market highest insulation voltage 2262V_{ESD} 15mm creepage in compact Stretched S08 -50ppm/°C Low Gain Drift +/-0.5%/ 1%/ 3% gain accuracy 	Stretched S08 package
Intelligent Power Module Interface Optocoupler				
SFH6345 TLP550, TLP559, TLP759	HCPL-4502 HCPL-4503	ACPL-K453	<ul style="list-style-type: none"> 8 mm Creepage and Clearance 50% smaller package size 	Smaller footprint
PS8302L2 TLP799F	HCPL-4504	ACPL-W454 ACPL-P454		Smaller footprint Smaller footprint
PS9213, PS9313L2 TLP799F	HCPL-4506	ACPL-W456 ACPL-P456		Smaller footprint Smaller footprint
PS9303L2 TLP706, TLP715F, TLP718F	ACPL-4800	ACPL-W480 ACPL-W483/P484 ACPL-P480 ACPL-P483/P484		Smaller footprint Smaller footprint
TLP105, TLP108	HCPL-M452/3/4/6	ACPL-M484 ACPL-M483	<ul style="list-style-type: none"> Higher CMR 30kV/µs 10MBd speed Totem-pole output, positive logic (M484), negative logic (M483) 	Faster speed
PS9309L2 TLP715F, TLP718F	HCPL-4502/03/04/06 HCPL-0452/53/54/66	ACPL-P483/P484 ACPL-W483/W484	<ul style="list-style-type: none"> 8 mm Creepage and Clearance Higher CMR 30kV/µs 10MBd speed Totem-pole output, positive logic (W484), negative logic (W483) 	Faster speed
VOW135, VOW136	HCNW4502/3/4/6	ACNU-4803 ACNU-4804 ACNV4506	<ul style="list-style-type: none"> Wider 11mm creepage and 10.5 mm clearance Wider Operating Temperature up to 105°C Higher CMR 	Smaller footprint
FODM452, FODM453 TLP109, TLP112, TLP114 PS9113, PS9122	HCPL-M452/53/54	ACPL-M43U	<ul style="list-style-type: none"> Wide temperature (-40°C to 105°C) Low LED input drive current IF 10mA 	Drop-in replacement
	HCPL-M456	ACPL-M46U	<ul style="list-style-type: none"> Wide temperature (-40°C to 105°C) 	Drop-in replacement

Note: Drop-in-replacement means no PCB board redesign is required

Upgrade	Feature	Benefit
High Voltage Insulation		
Improved Isolation/Insulation Ability to protect surrounding circuitry against physical damages resulting from differential voltages.	ACNT and ACPL-xxxJC family offers highest available working voltage ratings with regulatory approval per IEC/EN/DIN EN 60747-5-5 of 2262V_{PEAK} *	Meets international safety regulations and standards. Provides better isolation and overall safety performance.
Noise Isolation		
High CMR Common-mode transient rejection or signal isolation of data through suppression of noise transients.	Offers guaranteed CMR performance up to 150 kV/μs which is the highest available in the market.	Improves system performance, and reliability . More robust systems and better data integrity meet EMI and ESD requirements.
Power Consumption		
Drive Current, I_d Low Drive Current, LED drive current.	Offers the lowest I_d (up to 40 μA) devices in the market and broadest HCMOS compatibility.	Eliminates additional LED drive circuitry . Improves system efficiency and reduces power consumption and LED degradation.
Lower Power Supply Lower power supply (3.3V)	Lower the power consumption and meets JEDEC low voltage requirements.	Up to 50% energy saving.
Flexible Supply Voltages (3.3V/5V)	Support a combination of two different supply voltages at the input and output.	Built-in internal level shifter , eliminate the need of extra power supply. 3.3V or 5V. 3.3V helps to improve the overall power consumption.
Temperature		
Temperature The DC, speed performance and the reliability information is ensured at the specific temperature range.	Support up to -40°C to 125°C temperature range.	Allow extreme temperature operation.
Speed Benefits		
Propagation Delay, tp Describes how quickly a logic signal can propagate through the system.	High speed digital optocouplers to meet wide range of applications with tp as low as 22 ns .	Increase switching efficiency and better speed performance.
Upgrade Pulse Width Distortion, PWD PWD is the difference between I _{PHL} and I _{PHL} and often determines the maximum data rate capability of a transmission system.	The lowest PWD offered by optocoupler is 2 ns .	To ensure signal data integrity over long bus line.
Package and Space Savings		
Multi-Channels, Bi-directional Features	Integrated dual, triple, quad with bi-directional channels offers in small S08 and S016 package. Bi-directional 2 channels with LED direct drive in Stretched S012 package	The integrated bi-directional channels help in space savings and ease of designs.
Surface Mount Device SMD permits more component density than DIP.	Smaller package to deliver the same functionality as standard DIP. True surface mount technology and standard footprint.	Lower assembly cost , easier and faster handling as well as better solderability.
ACNT 15mm Creepage/Clearance Package	Compact stretched S08 package able to withstand high insulation 2,262 Vpk and transient overvoltage 12,000 Vpk	Provides space savings . Meets IEC/JUL/CSA new/ latest revision equipment standards for C/C, insulation voltage and/or transient overvoltage needs.
ACPL-P/W/H/K 8mm Creepage/Clearance Package ACNU 11mm Creepage/Clearance Package	The package is 50% smaller than conventional DIP package. It can withstand high isolation voltages and meet regulatory requirements such as IEC/JUL/CSA standards.	Provides space savings . Allows high voltage surge protection. Meets many IEC/JUL/CSA equipment standards that call for clearance and creepage of 8mm .
Smaller S05 Package	Smaller S05 package (as compared to existing S0-8 package)	Provides greater than 40% space savings .




BROADCOM Motion Control Upgrade Parts

Existing Parts	Upgrade Part	Upgrade Features	Footprint Information
HEDS-9140	AEDT-9810	<ul style="list-style-type: none"> • High Resolution of up to 5000 Counts per Revolution • -40°C to 115°C Operating Temperature • Low Power Consumption (Typical Icc: 20 mA) • Spatial play tolerance of 0.40mm • Allows motor shaft axial play of +/- 0.15mm • Choice of Index Pulse Width (90° and 180°) • Better ESD Immunity HBM 4kV (JESD22-A114D) 	<ul style="list-style-type: none"> • Pin Compatible to legacy HEDS-9xxx Series
HEDC-55xx	AEDC-55xx	<ul style="list-style-type: none"> • Available in two or three channel encoder A,B and I • Latching connector design • Single 5V supply • Resolution of up to 5000 CPR • TTL compatible, with single ended or differential output. • Quick assembly • No signal adjustment required • Small size -40 °C to 85 °C operating temperature 	<ul style="list-style-type: none"> • Compatible mounting to legacy HEDC-55xx Series • External mounting ears option available for larger motors.
HEDM-550x	AEDM-5810	<ul style="list-style-type: none"> • High Resolution - up to 5000 CPR • Operating temperature -40°C to +85°C • Quick and easy assembly • No signal adjustment required • Cost Effective solution • Small size • TTL compatible output • Single 5V supply with 10% tolerance • Differential Output (Line Driver) available with AEDL-581x Series 	<ul style="list-style-type: none"> • Compatible mounting to legacy HEDM-55xx Series • External mounting ears option available for larger motors.
AEAT-6010/601Z	AEAT-9010/901B	<ul style="list-style-type: none"> • Supply voltage 5.0V with dual voltage 3.3/5V for I/O • 10 to 18 bits Absolute single-turn resolutions • 3-Wire SSI serial output up to 10MHz clock speed • Wide operating temperature -40°C to 125°C • 6mm shaft diameter • Typical INL error of 0.3 degree (Max. +/-0.8 degree) 	Bearing-less Kit, 5-pin connector interface output
AEAT-601B	AEAT-901B	<ul style="list-style-type: none"> • Supply voltage 5.0V with dual voltage 3.3/5V for I/O • 3 Channels wire output A,B,I • Incremental output up to 10kCPR • Wide operating temperature -40°C to 125°C • 6mm shaft diameter 	Bearing-less Kit, 5-wire cable interface output
AS33-M42M	AS20-M42M	<ul style="list-style-type: none"> • Operating voltage 5V • Smaller 20mm outer diameter • Absolute single-turn resolution (15 to 18 bits) • Absolute multi-turn resolution (12 to 32 bits) • SSI/BISS-C/RS485 with differential outputs • Higher SSI frequency, up to 10MHz • New SPI 4-wire option • Enhanced auto-calibration • Magnetic shield included • Industrial operating temperature: -40°C to 115°C 	Bearing-less kit with 4mm hub size

Existing Parts	Upgrade Part	Upgrade Features	Footprint Information
AEAT-6600 AEAT-8800 AEAT-8811 AEAT-9922 AEAT-9933	AEAT-9988M	<ul style="list-style-type: none"> • Supply voltage 5.0V with dual voltage 3.3/5V for I/O • Programmable Incremental output up to 65535 CPR • Programmable Absolute 16 to 23 bits single-turn resolutions • Protocol: SPI ; SSI RS-485, BiSS-C, ABI, UVW (Single-ended or differential) • High accuracy axial sensing, typical INL error - 0.02 degree • Built-in multi-turn battery back up solution up to 16 bits 	Small form factor QFN 24-Pin 4mm x 4mm package
	AEAT-9955 AEAT-9966	<ul style="list-style-type: none"> • On-Axis and Off-Axis with side-shaft, axial or radial assembly • Re-programmable encoding features with EEPROM • Programmable Absolute 10 to 18-bit • Configurable to +/- 1LSB no flickering • Programmable Incremental (CPR to 20,000CPR) • Dedicated ABI UVW & SSI or SPI pins • PWM option • SPI with 8/16bits CRC options with alarm and error • Auto-Calibration feature (easy gain and accuracy correction) • High Absolute Accuracy of +/- 0.1° mechanical at room temp (on/off-axis) • Sleep mode, wake up via external pin • Dual die package for "redundancy" (AEAT-9966) • Functional Safety ISO 26262, ASIL-D ready (certification pending) 	Surface mount DFN 30-pin 5mm x 8mm package
AEIC-7272	AEIT-8000	<ul style="list-style-type: none"> • Quad differential line driver IC • Supply voltage 4.5V to 36V • Push Pull driver with switching frequency up to 5MHz • High drive capability up to 200mA • Thermal shutdown • Protection against short circuit or excessive temperature • Wide operating temperature -40°C to 125°C 	Surface mount SOIC 16-pin and TSSOP 16-pin packages

Existing Parts	Upgrade Part	Upgrade Features	Footprint Information
AEDR-8300 AEDR-8320 AEDR-8400 AEDR-8500 AEDR-8710 AEDR-8720	AEDR-9820 AEDR-9830 AEDR-9820A AEDR-9830A	<ul style="list-style-type: none"> • Dual-track design, avoid cross talk Index to Channels A/B • Two options of base resolutions (225LPI/8.86LPmm & 318LPI/12.52LPmm) • Selectable 3 channels differential Analog & Digital outputs • Higher base frequency 200KHz, up to 2MHz • Selectable pins for Index gating • IR LED light source, more robust to contamination • Selectable pins 1x/2x/4x/8x/16x Interpolation factor • Industrial Operating Temperature: -40°C to 115°C • Automotive Grade-1 AEC-Q100 qualified up to 125°C (AEDR-9820A/AEDR-9830A) • Production/QMS per IATF-16949 conformity 	Surface mount QFN 24-Pin 4mm x 4mm package
	AEDR-9830DP	<ul style="list-style-type: none"> • Operating voltage 3.3V and 5V • Translucent protection compound • Dual-track design, avoid cross talk Index to Channels A/B • Base resolution (318LPI/12.52LPmm) • Selectable 3 channels differential Analog & Digital outputs • Higher base frequency 200KHz, up to 2MHz • Selectable pins for Index gating • IR LED light source, more robust to contamination • Selectable pins 1x/2x/4x/8x/16x Interpolation factor • Industrial operating temperature: -40°C to 115°C 	Surface mount QFN 24-pins 4mm x 4mm package
	AEDR-9920	<ul style="list-style-type: none"> • Single Track detector design, flexible optical radius (Rop) • support spiral codewheel • Operating voltage 3.3V and 5V • 3-Channel Differential Digital (A,B,I) output • Selectable pins for Index Gating • Operating Temp: -40°C to 115°C • Encoding resolution 225LPI (8.858 LPmm) • Hardware pin selectable interpolations 1x, 2x, 4x... up to 256x • User SPI software programmable interpolation 1x, 2x, 3x... up to 512x • Spatial XY misalignment tolerance of up to 500µm 	Surface mount QFN 24-Pin 4mm x 4mm package
	AEDR-9930E/EA AEDR-9930EL/ELA	<ul style="list-style-type: none"> • Dual track design with pin trigger/off-track trigger auto calibration • Higher base frequency 200KHz, up to 4MHz • Base resolution (397LPI/15.63LPmm) or base 128µm pitch • Differential digital ABI outputs • Operating temperature: -40°C to 125°C • Automotive reliability Grade 1 AEC-Q100 qualified • Pin selectable interpolation up to 512x • Software SPI programmable up to 1024x • Linear with base pitch 64µm, e.g. 1µm linear with 16x interpolation, 4x quadrature • Nanometer resolutions with higher interpolation selections • Misalignment tolerance, radial up to 300µm, tangential up to 500µm • Status pins or LED output (calibration, functional and error) • IR LED light source 850nm 	Surface mount QFN 32-pins 5mm x 5mm package
	AEDR-9940	<ul style="list-style-type: none"> • Operating voltage 3.3V and 5V • Translucent protection compound • Dual track design with pin trigger/off-track trigger auto calibration • Higher base frequency 250KHz, up to 4MHz • Base resolution (198.4375 LPI/7.8125LPmm) or base 128µm pitch • Selectable differential Analog or 3 channels differential Digital ABI outputs • Operating Temp: -40°C to 115°C • Pin selectable interpolation up to 1000x • Software programmable up to 1024x • Linear with base pitch 128µm, e.g. achieve 10µm linear @ 32x quadrature • Nanometer resolutions with higher interpolation selections • Spatial XY, misalignment tolerance up to 350µm • LED PEAK wavelength 660nm suitable for Lidar application 	Surface mount QFN 24-pins 4mm x 4mm package



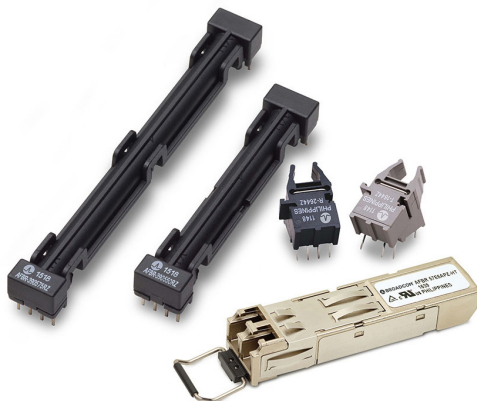
Optical Encoders

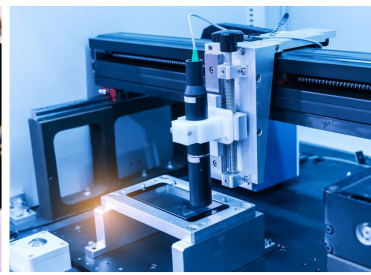
Module		House/Kit	
Transmissive			
<p>HEDS-90/91/92x</p>  <p>HEDS-90/91xx</p>  <p>HEDS-97xx</p>  <p>HEDT-90/91xx AEDT-981x (Up to 5000CPR)</p>  <p>AEDB/7-9140</p>  <p>AEDB/7-9340</p> 	<p>HEDC-55/56xx AEDC-55/56xx (Up to 5000CPR)</p>  <p>HEDS/HEDM-55/56xx AEDM-58xx (Up to 5000CPR)</p>  <p>HEDL-55/56xx AEDL-58xx</p> 		
Reflective			
<p>AEDR-83xx</p>  <p>AEDR-8400</p>  <p>AEDR-8320</p>  <p>AEDR-9500 2942PI 3Ch 4X</p>  <p>AEDR-97xx 3182PI 3Ch</p>  <p>AEDR-98xx/A/DP 3182PI/251PI 3Ch, AEC-0100, 125°C</p>  <p>AEDR-9920 Z25 LPI 3Ch, 115°C</p>  <p>AEDR-9940 198-4LPI, dust protection</p>  <p>AEDR-9850E/EL 397 LPI 3Ch, 115C AEDR-9950E/EA AEC-0100, 125C Rotary/Linear</p> 	<p>HRPG-AXXX (Rotary Pulse Generator)</p>  <p>ASZ-MSXX (Up to 2048CPR)</p>  <p>HEDR-54xx</p> 		
Magnetic Encoders			
<p>AS35-M235 23-bit ST</p>  <p>AEAT-84/86AD 16-bit MT</p>  <p>AR18/25 21/25-Bit/SSV/ESL + ABI 0192CPR</p>  <p>AR25-ASxx/ABxx 25-Bit Up to 1030mm Through Hollow</p>  <p>AR35-Lxxx Linear 25-Bit Incremental/ 1.25µm</p>  <p>AR35-Lxxx T7-25-Bit 0D35 Through Hollow</p>  <p>AEAT-6600 (16 Bits/1024CPR)</p>  <p>AEAT-8800/88T 0FN (16 Bits/ 4096CPR)</p>  <p>AEAT-9022/9033 (On/Off Axis) 18 Bits/70K CPR</p>  <p>AEAT-9055/9066 (AEC-0100/ASL-D) 18 Bits and 20K CPR</p> 	<p>IC</p>		
Optical Encoders			
Transmissive Module		Kit	
<p>AS35-M42M (23-Bit ST + 16-Bit MT, 0D35mm)</p>  <p>AS20-M42M Magnetic Kit (08-Bit ST+ 24-Bit MT, 0D20mm)</p>  <p>AS35-M42M Magnetic Kit (18-Bit ST+ 24-Bit MT, 0D33mm)</p> 	<p>AEAT-3700 Voltage Monitor 2.8V to 6.5V</p>  <p>AEAT-8000 4.5V to 36V, 5MHz</p> 		
Energy Harvesting (EHMT)			
Codewheel		Line Driver and Monitor IC	
<p>HEDX-51/61xx/AEDM-5840 Metal/Mylar Codewheel</p> 			

Existing Parts	Upgrade Part	Upgrade Features	Pricing Comparison	Footprint Information
Versatile Link Transmitter and Receivers				
HFBR-1521Z / HFBR-2521Z HFBR-1531Z / HFBR-2531Z HFBR-1521ETZ / HFBR-2521ETZ HFBR-1531ETZ / HFBR-2531ETZ HFBR-1522Z / HFBR-2522Z HFBR-1532Z / HFBR-2532Z HFBR-1522ETZ / HFBR-2522ETZ HFBR-1532ETZ / HFBR-2532ETZ	AFBR-1521CZ AFBR-2521CZ AFBR-1531CZ AFBR-2531CZ AFBR-1541CZ AFBR-2541CZ	<ul style="list-style-type: none"> -40°C to +95°C temperature range 3.3V or 5V operating voltage High efficient transmitter TTL/CMOS receiver output Lower power consumption Low propagation delay with guaranteed max. part-to-part skew High dynamic receiver optical input range 	Price Premium due to significant better features: <ul style="list-style-type: none"> Industrial temp range Low propagation delay skew 3.3V or 5V operation No Rx optical saturation 	Same footprint, changes to Tx driver and Rx output interface required. Optical backwards compliant, but check power budget.
HFBR-1528Z / HFBR-2528Z	AFBR-1528CZ AFBR-2528CZ	<ul style="list-style-type: none"> -40°C to +95°C temperature range 3.3V or 5V operating voltage High efficient transmitter Lower power consumption Low propagation delay with guaranteed max. part-to-part skew High dynamic receiver optical input range 		
HFBR-1521Z / ETZ HFBR-1522Z / ETZ	AFBR-1629Z AFBR-1639Z	<ul style="list-style-type: none"> Transmitter with integrated driver TTL/CMOS compatible input High efficient transmitter Low power consumption -40°C to +85°C temperature range 3.3V or 5V operating voltage 	Price Premium due to significant better features: <ul style="list-style-type: none"> Industrial temp range Tx integrated driver 	Same footprint, but digital input, no external driver required
HFBR-1528Z / HFBR-2528Z	AFBR-1629Z AFBR-2529Z	<ul style="list-style-type: none"> DC to 50Mb/s Lower power consumption Higher EMI Immunity Lower propagation delay time Power on Reset 		Tx: Same footprint, but digital input, no external driver required Rx: drop-in replacement
AFBR-2529Z	AFBR-2529SIZ	<ul style="list-style-type: none"> Additional safety function with RSSI feature 	-10% price adder for RSSI	Drop-in replacement
Plastic Optical Fiber (POF) Cable & Connectors				
HFBR-RUDxxxZ HFBR-EUDxxxZ	AFBR-HUDxxxZ	<ul style="list-style-type: none"> Halogen Free 	Up to 5% cost saving	Drop-in replacement
HFBR-4501Z / HFBR-4511Z HFBR-4503Z / HFBR-4513Z HFBR-4506Z	HFBR-4531Z HFBR-4532Z HFBR-4533Z HFBR-4535Z	<ul style="list-style-type: none"> Simplified POF connector termination, no crimp tool required No metal at connector, preferred in high voltage and medical applications 	Similar prices	Drop-in replacement



Existing Parts	Upgrade Part	Upgrade Features	Pricing Comparison	Footprint Information
Miniature Link Transmitters and Receivers				
HFBR-1412xZ HFBR-1414xZ HFBR-2416xZ	HFBR-1412xPZ HFBR-1414xPZ AFBR-2418xZ AFBR-2419xZ	<ul style="list-style-type: none"> ESD enhanced device: 2kV HBM Integrated quantizer Digital TTL/CMOS compatible output Analog receiver signal strength indicator output Reduced design effort and PCB space Enhanced EMC performance Short propagation delay Lower power consumption 3.3V or 5V supply voltage 	<ul style="list-style-type: none"> Same prices Price premium due to significant better features: Fully integrated Rx with digital output 	<ul style="list-style-type: none"> Drop-in replacement Same footprint, but digital output along with RSSI
High Galvanic Insulation Link				
HFBR-3810xZ	AFBR-390525RZ	<ul style="list-style-type: none"> VDE Certification as per IEC 60747-5-5 Lower power consumption Shorter propagation delay with guaranteed max part-to-part skew 	Up to 30% cost saving	Similar footprint
HFBR-3810xZ	AFBR-3905xxRZ AFBR-3950xxRZ	<ul style="list-style-type: none"> VDE Certification as per IEC 60747-5-5 Up to 50 kV peak transient voltage suppression Up to 12 kV effective working voltage Four creepage / clearance length options Two speed options: DC to 5 Mbd and DC to 50 Mbd 		Different footprints
Fast Ethernet POE & MM GOF				
AFBR-5972Z	AFBR-5972EZ AFBR-5972BZ	<ul style="list-style-type: none"> 45% lower max power consumption Better EMI Immunity for highest system robustness LVDS I/Os for direct interface to FPGAs Up to 250Mbd link rate for higher bandwidth requirements 	Price premium due to significant better features	Same footprint, but different electrical interface
HFBR-5961ALZ	AFBR-59E5APZ	<ul style="list-style-type: none"> 60% lower power consumption Integrated data I/O AC coupling Integrated Tx data inputs termination 	Price advantage possible	Same footprint, same optical interface, change of external data I/O termination required
HFBR-57E5APZ	AFBR-57E6APZ	<ul style="list-style-type: none"> 50% lower max. power consumption 	Price advantage possible	Drop-in replacement
AFBR-59E4APZ	AFBR-59E5APZ	<ul style="list-style-type: none"> 40% lower power consumption 	Similar price	Drop-in replacement
AFBR-59E4APZ-HT	AFBR-59E5APZ-HT	<ul style="list-style-type: none"> 40% lower power consumption 	Similar price	Drop-in replacement
AFBR-59E5APZ	AFBR-59E5APZ-HT	<ul style="list-style-type: none"> 95% max. operating temperature Four additional housing leads for improved signal grounding and heat dissipation 	Price premium	Four additional housing leads
AFBR-57E6APZ	AFBR-57E6APZ-HT	<ul style="list-style-type: none"> 95% max. operating temperature 	Price premium	Drop-in replacement
AFBR-5803ATOZ AFBR-5803ATZ AFBR-5803TZ	AFBR-5813TOZ	<ul style="list-style-type: none"> Reduced power dissipation: ~50% lower 0.5 Watt (max) and 0.3 Watt (typical) Low profile housing 	Small price premium	MSA compliant Pin-2-pin compatible 3.3 V supply only Low profile housing
AFBR-5803AQZ AFBR-5803AZ AFBR-5803Z	AFBR-5813QZ	<ul style="list-style-type: none"> Reduced power dissipation: ~50% lower 0.5 Watt (max) and 0.3 Watt (typical) Low profile housing 	Small price premium	MSA compliant Pin-2-pin compatible 3.3 V supply only Low profile housing
AFBR-5803xTxx	AFBR-5823TOZ	<ul style="list-style-type: none"> Diagnostics for enhanced system reliability Reduced power dissipation: ~50% lower 0.5 Watt (max) and 0.3 Watt (typical) 	Price premium for DMI feature	2x9 pin-out Low profile housing 3.3 V supply only
AFBR-5803xxx	AFBR-5823QZ	<ul style="list-style-type: none"> Diagnostics for enhanced system reliability Reduced power dissipation: ~50% lower 0.5 Watt (max) and 0.3 Watt (typical) 	Price premium for DMI feature	2x9 pin-out Low profile housing 3.3 V supply only





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