

## Technical Brief

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**Brief Number:** KM-02-18-2008  
**Reference:** Sensorless BLDC Motor Control  
**Application:** DPFlex Drive, 30V/30A  
**Revision:** 1.0  
**Date:** February 18, 2009

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<b>Overview</b>	<b>This Technical Brief describes the specifications for the DPFlex sensorless, BLDC drive. It is based on our DPDLite DP [Digital Power] drive product. Its primary purpose is to demonstrate a flexible feature set at a lower cost than DPDLite.</b>
<b>Control type</b>	Sensorless BLDC, back-EMF six-step (trapezoidal) commutation
<b>Operating Speed</b>	40,000 RPM max (2 pole motor)
<b>Speed Tolerance</b>	±5% (of peak no-load speed, steady state)
<b>Speed Range</b>	10:1 minimum, 20:1 typical
<b>Input Voltage</b>	15 Volts – 30 Volts 8 Volts – 16 Volts
<b>Peak Current</b>	30 Amps
<b>Connections</b>	Motor – M3, M2, M1 – Spade connectors Power – Battery +, Battery – Spade connectors Enable – Spade IO – Locking connector Communication – Locking connector
<b>Digital inputs</b>	1 digital input for drive On/Off control (30V tolerant) 1 digital input for direction control (30V tolerant)
<b>Digital Output</b>	1 digital output [0V – (Vbus-2.0) V] approximately
<b>Analogue input</b>	1 analogue input 0 Volts – 5 Volts
<b>Speed control</b>	Operating speed maintained with PID speed loop Programmable start-up current
<b>Dimensions:</b>	4.0 inch wide, 3.0 inch long, 1 inch high approximately

<b>Protection</b>	Reverse polarity Over temperature High current cutoff Under Voltage Phase to phase short circuit I <sup>2</sup> t monitor (for motor protection)
<b>Storage Temperature</b>	-40°C to 125°C
<b>Operating Temperature</b>	-30°C to 70°C de-rated above 30°C
<b>Communication</b>	USB to UART serial converter [interface dongle required]
<b>Software</b>	DPD, version. 10.82
<b>Firmware</b>	version. 8.14