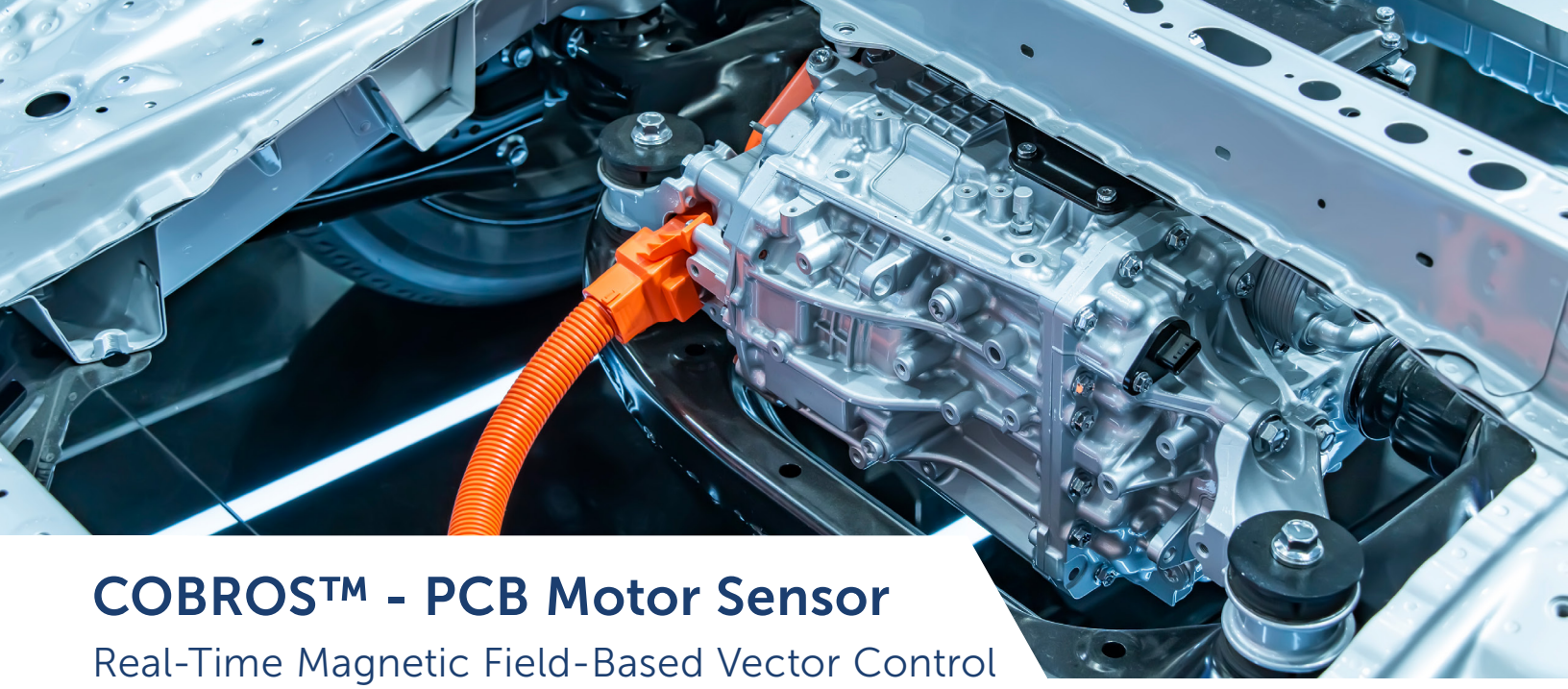


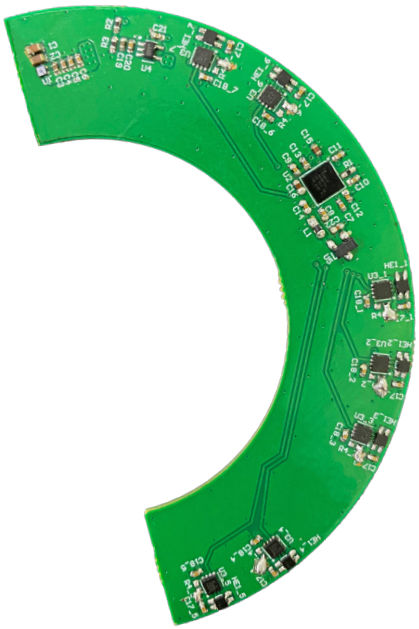
COBROS™ - PCB Motor Sensor

Real-Time Magnetic Field-Based Vector Control

COBROS™ (**C**alibration and **O**peration **B**ased on **RO**tational **S**ymmetry) is a brand-new and innovative approach to vector control for electric motors. It introduces in-situ magnetic B-field sensing directly at the stator and rotor, replacing traditional inference of magnetic states from separate current and position measurements. The COBROS™ technology involves embedding a custom PCB sensor inside the electric motor to perform multi-dimensional field decomposition using Hall and tunnel magnetoresistance (TMR) sensing principles, measuring both rotor position and the full vector of the stator and rotor magnetic fields. This enables complete, real-time vector control, granted by a single component instead of three separate current sensors and a position sensor.

Greater Efficiency and Improved Performance

The magnetic field-based vector control of the COBROS™ eliminates signal estimation errors and improves performance under dynamic and transient load conditions. The enhanced control accuracy also leads to smoother torque response and better dynamic behaviour.



Reduced Weight and Costs

The COBROS™ PCB sensor makes external current sensors and associated wiring completely redundant. By limiting the number of components required to control the electric motor, costs can reduced while system architecture becomes lighter.

Compact & Robust Design

With fewer constituent components, valuable engine space will be freed up, leading to greater design freedom. Also, the reduced amount of connectors and external elements will serve to lower the risk of system failure and improve operational reliability.

COBROS™ Motor Position Sensing Module		
Parameter	**Value**	**Unit**
Position Sensing Accuracy	±0.1 (Typical)	°
Resolution	<0.01	°
Speed Range	0-20,000	RPM
Load Depedence	<0.25	°
Absolute Angle Initialization	360 Degree Capable	-
Current Sensing Accuracy	±2-3	% F.S
Dynamic Current Range	0-800	A
Bandwidth	Up to inverter PWM frequency (~10-20 KHz)	-
Current Sensing Dependency	-	-
Supply Voltage	3.3 / 5.0	V
Operating Temperature	-40 to 125	°C
Sampling Rate	>50	kHz
Calibration	Performed at nominal point (e.g., 5000 RPM)	-
Interfaces	SPI / CAN / UART	-

About CTS Corporation

CTS is a leading designer and manufacturer of products that Sense, Connect, and Move. We manufacture sensors, actuators and electronic components in North America, Europe and Asia, and provide solutions to OEMs in the aerospace & defense, medical, industrial, communications, information technology and transportation industries.

The CTS COBROS™ technology constitutes the latest step in our targeted effort to advance the electrification of the transportation and industrial sectors with more efficient electric motor position and current sensing solutions. We offer high-end, easy-to-install plug & play options as well as highly customized solutions, developed in close collaboration with our industry partners. Contact us through our website at www.ctscorp.com If you are interested in working together with us in bringing COBROS™-enabled systems to market.

Contact Information

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