ANALOG DEVICES

AHEAD OF WHAT'S POSSIBLE™

Enable Sustainable Manufacturing

with Variable Speed Drive Solutions

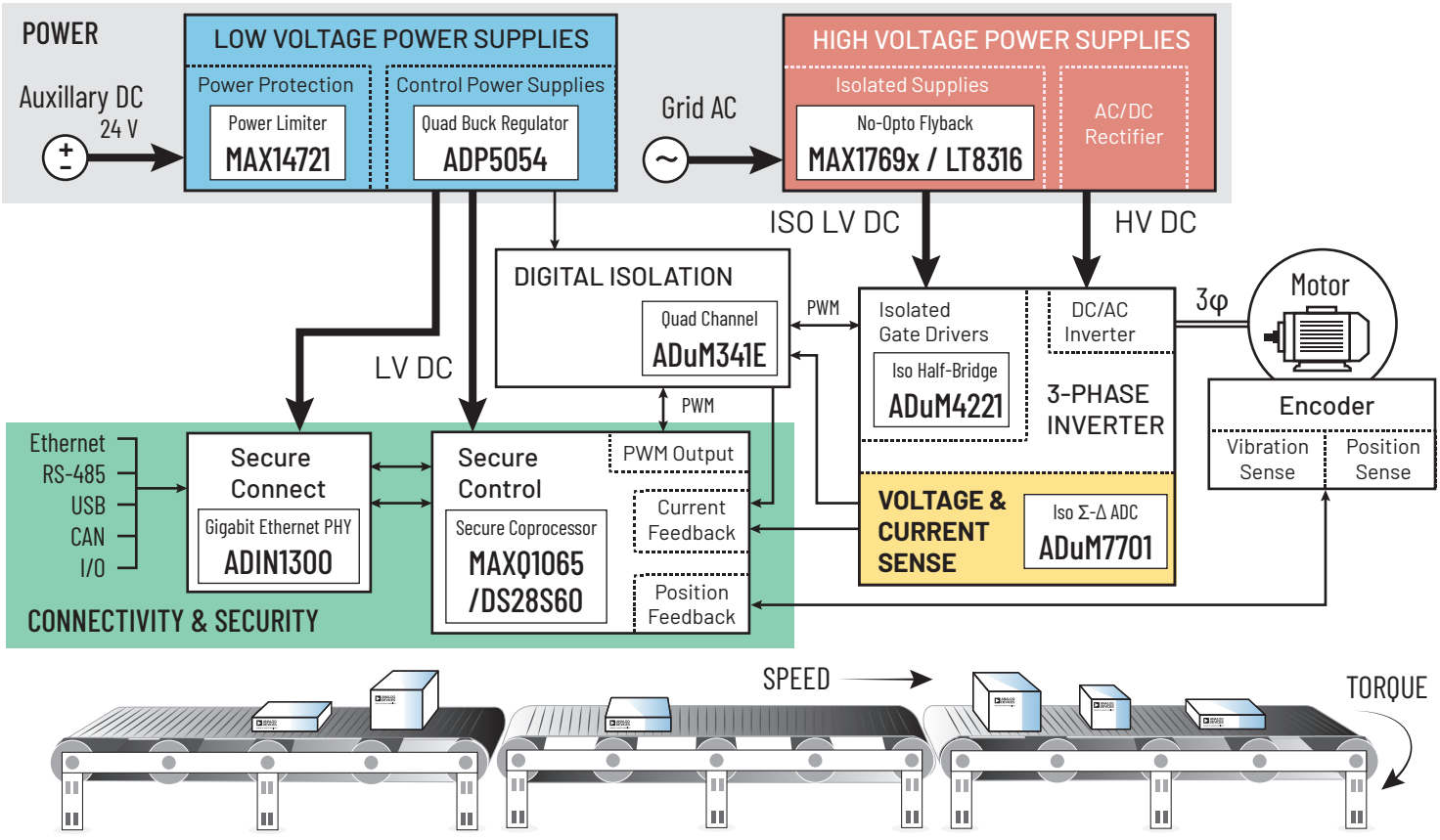
Up to 70% of electricity used in industry is consumed by motors. Historically, the vast majority of motors were connected directly to the AC grid and operated at a fixed rotational speed. By controlling the speed of the motor, the variable speed drive can significantly improve motor efficiency, enabling up to 10% reduction in global energy usage. Analog Devices provides complete signal chain solutions incorporating high performance current and voltage sensing, robust isolation, high density power management and seamless connectivity. These deliver advanced motion solutions that increase productivity, extend equipment lifetime and accelerate lower carbon manufacturing.

Improve Motor Efficiency

Decrease Carbon Emissions

Extend Equipment Lifetime

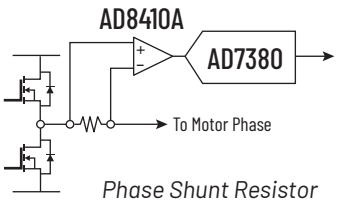
Reduce Energy Consumption



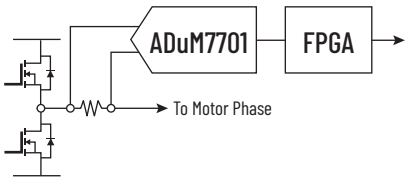
VISIT ANALOG.COM/MOTOR-DRIVES

Precision Current & Voltage Feedback

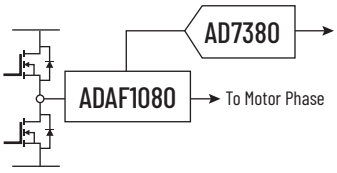
Current feedback is vital to enhance drive performance and determines the overall control bandwidth and response time of motors. Ensuring the motor is operating at peak efficiency, low latency, synchronized measurements offered by ADI's **AD8410A** and **MAX49925** current sense amplifiers enable faster system response for low voltage motor drives (<100 V). For higher voltage systems, the **ADuM7701** / **ADuM7702** / **ADuM7703** / **ADuM7704** isolated sigma delta ADC products offer very low offset drift for reduced torque ripple, and enable the use of low-value shunt resistors for improved system efficiency, accuracy, and reliability. In applications with isolated current sensing using hall sensors, the **AD7380** (4 MSPS) and **MAX11192** (2 MSPS) simultaneous sampling SAR ADCs enhance noise and dynamic range performance.



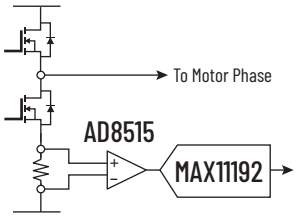
Phase Shunt Resistor + High CM Op-Amp + ADC



Phase Shunt Resistor + Isolated Sigma-Delta ADC



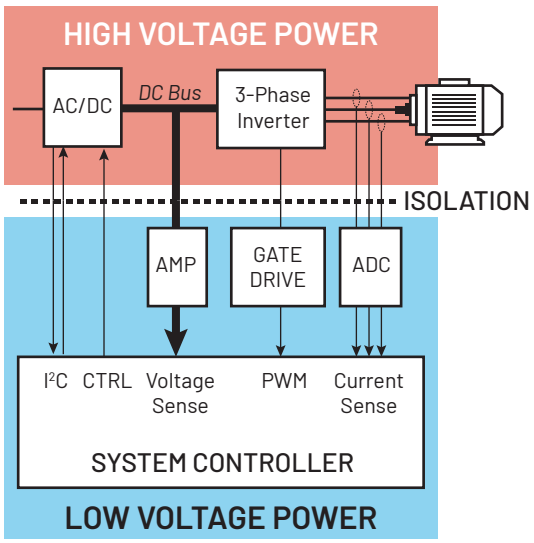
AMR (or Hall) Current Sensing + ADC



Leg Shunt Resistor + Op-Amp + ADC

Digital Isolation & Isolated Gate Drivers

ADI's innovative portfolio of data isolators delivers digital isolation technology for protocols ranging from SPI, I²C, USB, and CAN to gigabit LVDS, protecting people and assets from high voltage and disruptive electric interference, while maintaining data integrity. The **ADuM341E** quad channel digital isolator offers galvanic isolation up to 1173 Vpeak along with low propagation delay enabling low latency and low jitter for precision timing. Meanwhile robust isolated gate drivers protect power devices from faults and electromagnetic transients. The **ADuM4221** isolated half-bridge gate driver provides ultra low propagation delay for improved system efficiency, offers common mode transient immunity (CMTI) up to 150 kV/µs to support fast switching speeds and is compatible with the latest SiC and GaN technology. The **ADuM4122** offers two different slew rate levels to optimise power loss and EMI control.



Power Management

As motor drives become decentralized and are placed closer to the motor, efficient power management in smaller enclosures becomes key. The **MAX17690** / **MAX17691** / **MAX17692** flyback converters enable isolated and high-density power solutions while multi-output buck regulators like the **ADP5054** regulate the output voltages for powering digital loads (e.g. FPGA / processor). **MAX14721** / **MAX14722** / **MAX14723** power limiters enable voltage and current protection for enhanced drive reliability.

MAX17690

No-Opto Isolated Flyback Controller

- Programmable switching frequency
- Integrated overvoltage protection

Robust Secure Connectivity

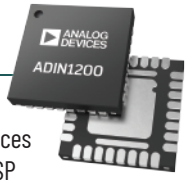
Analog Devices Ethernet PHYs, RS-485/RS-422 and LVDS/M-LVDS transceivers are designed with added noise immunity and robustness for reliable operation in harsh industrial environments. The **ADIN1200** industrial Ethernet PHY paired with the **fido5200**, 2-port real-time Ethernet multiprotocol (REM) switch, enables up to 100 Mbps data transfer for secure connectivity. For RS-485, the **MAX22507E** / **MAX22508E** transceivers are optimized for high speed communication up to 50 Mbps, offer full duplex operation and include integrated surge protection.

fido5100/5200

REM Switch

- Support for all industrial protocols
- 10 Mbps / 100 Mbps

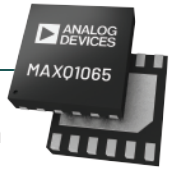
ADIN1200



10/100 Mbps Ethernet PHY

- MIII, RMII, RGMII MAC interfaces
- 32-lead, 5 mm x 5 mm LFCSP

MAXQ1065



Secure Co-Processor

- ChipDNA™ PUF encryption
- Secure boot

With increased connectivity comes the need for added security at the device level. Protecting production assets from malware attack, and untrusted commands through secure authenticator technology is critical. The **DS28S60** and **MAXQ1065** protect motor drives by enabling secure boot and trusted execution, ensuring a secure chain of trust across the network.