EIU

ELECTRONICS INFORMATION UPDATE

A Mouser Magazine

EUROPE | APRIL 2023

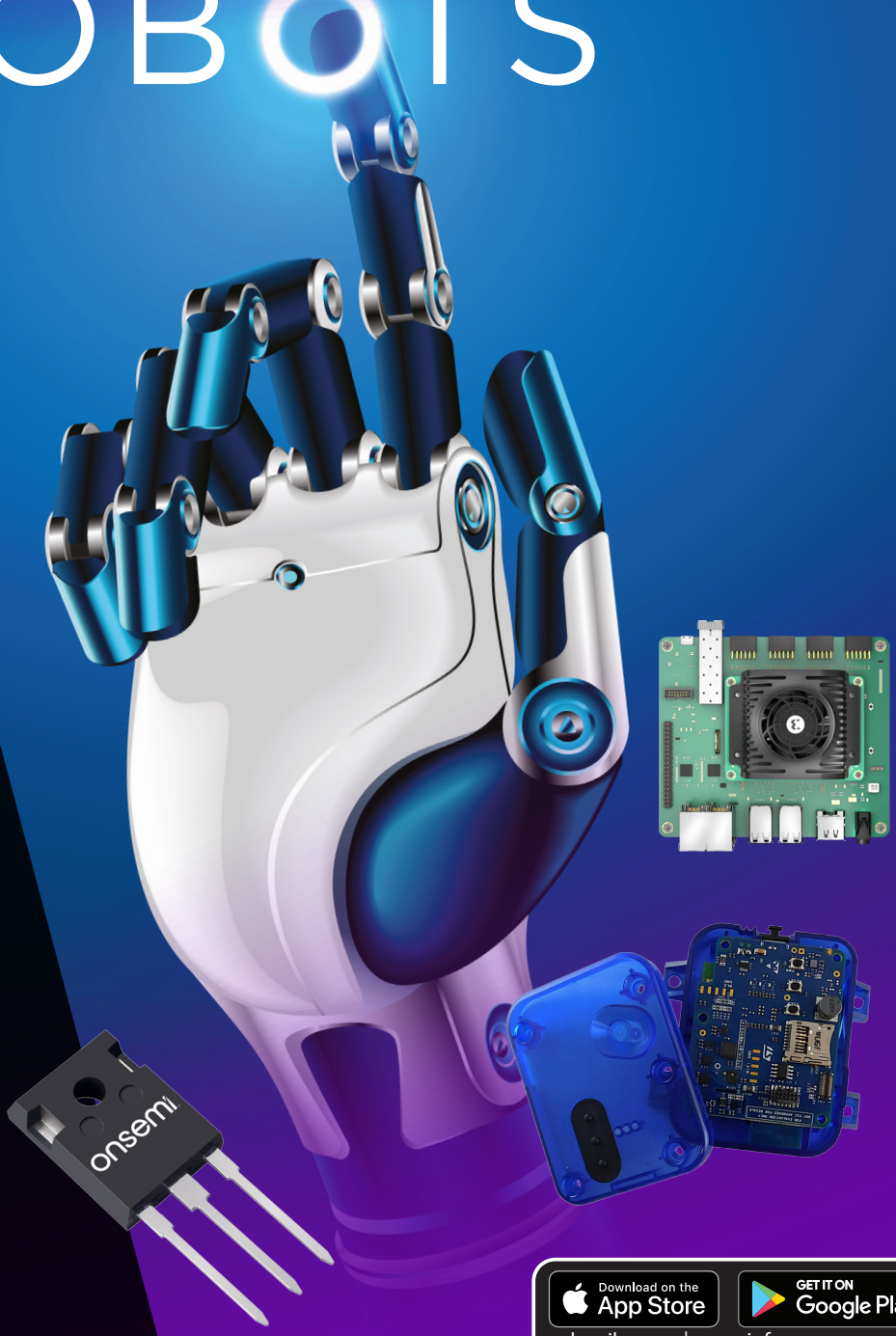
mouser.com

RISE OF THE ROBOTS

FEATURES

PLUS

REGULARS



Cover image credit: Andrey Suslov/Shutterstock.com

EIU
ELECTRONICS INFORMATION UPDATE

mouser.com

In this issue...

Robots star in our April issue. We present articles discussing: True Power On position sensing; a cost-effective self-cleaning technology for cameras and sensors; how the robot revolution is good for business; a robotics starter kit; and how small upgrades can make a huge difference at BattleBots 2023.

Adam Taylor & Dr Richard Harriss discuss architecting, designing, analyzing and implementing systems in their Systems Engineering mini-series. Mike Parks completes his history of Arduino in Tech Tips; David 'Connector Geek' Pike investigates connectors to keep robots moving; and Stuart Cording looks at measurement tools for robots. Plus the news round-up, Dev Kit Pick and, of course, a review of the most innovative products now in stock at Mouser.

Published by Mouser Electronics.
For Editorial contact Nick Foot at *nick.foot@bwwcomms.com*.

For Advertising, contact Claudia Bertaccini at *claudia.bertaccini@mouser.com.*

Multiturn Position Sensor Provides True Power-On Capabilities with Zero Power

By Stephen Bradshaw, Product Applications Engineer,
Christian Nau, Product Marketing Manager, and
Enda Nicholl, Strategic Marketing Manager, Analog Devices

Image credit: Art Stock Creative/Shutterstock.com

Abstract

This article outlines the current methods used to enable true power-on (TPO) multiturn sensing capabilities and introduces a new simplified solution that is set to reshape both the industrial and automotive position sensing markets. The simplified system will enable designers, with or without magnetic system design experience, to replace bulky and expensive incumbent solutions.

Introduction

Position sensors and encoders are ubiquitous in automotive and industrial applications where it is vital that the position of the system is known at all times. However, incumbent position sensors and encoders can only provide a single turn or 360° TPO position information. Systems that require TPO position information over multiple rotations or wider measurement range typically incorporate a backup power supply to track and memorize the multiple rotations of the single turn sensor after an unexpected loss of power, or to track multiple turn movement during key-off or power-down.

Image credit: Jenson/Shutterstock.com

Alternatively, a gear reduction mechanism can be added to the system to reduce the multiple rotations to a single turn, and in combination with a single turn sensor, to find TPO multiturn position information.

These solutions are expensive and bulky, and, in the case of the battery backup system, a regular maintenance contract is required.

Rotary and linear encoders are key devices used in applications where the system designer needs to ensure that the position of a mechanical system is always known for closed-loop control, even after a loss of power either as part of the normal operating cycle or accidental. The challenge for system designers is to ensure that the TPO position is available even after a loss of power. If the system state is lost, then a lengthy and often complex procedure is required to reset the system into a known state.

Incumbent Solutions

Modern factories are becoming more dependent on robots and cobots to reduce cycle times, increase factory throughput, and improve efficiency.

One of the major costs and inefficiencies associated with standard robots, cobots, and other automated assembly equipment is the resulting downtime required for rehoming and intializing power-up following a sudden loss of power while operating. This resulting downtime and productivity loss are both costly and inefficient.