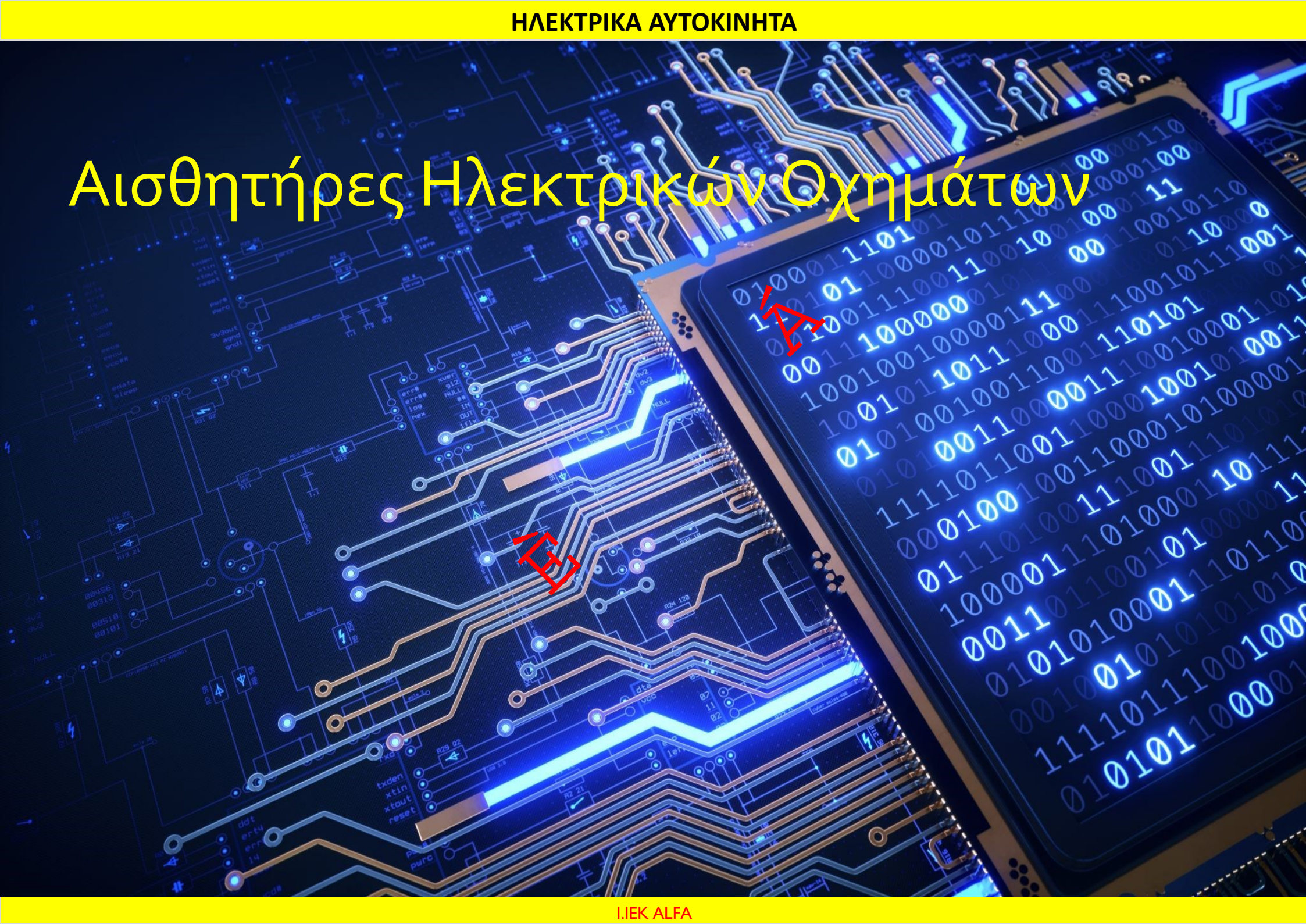
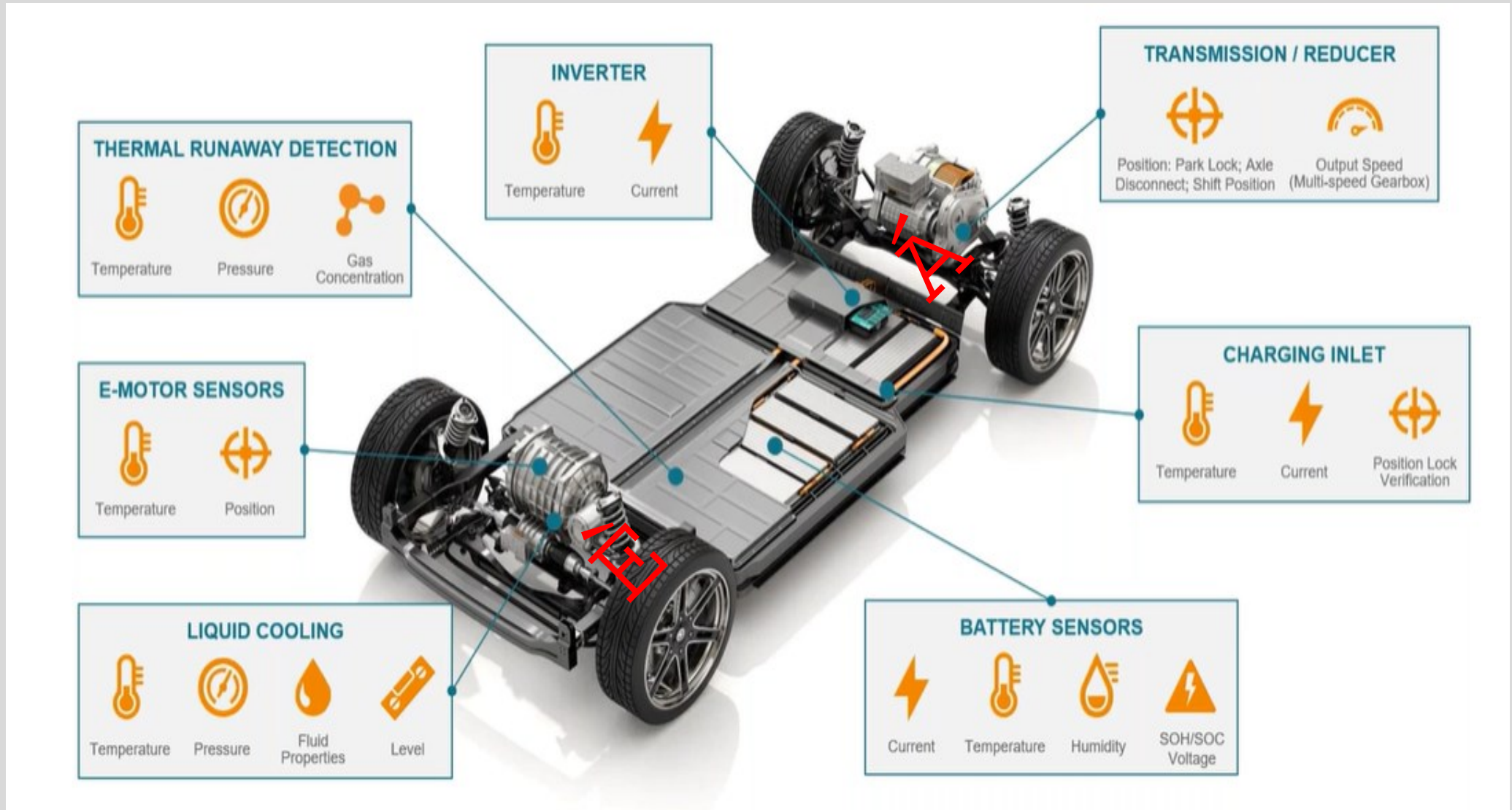


# Αισθητήρες Ηλεκτρικών Οχημάτων





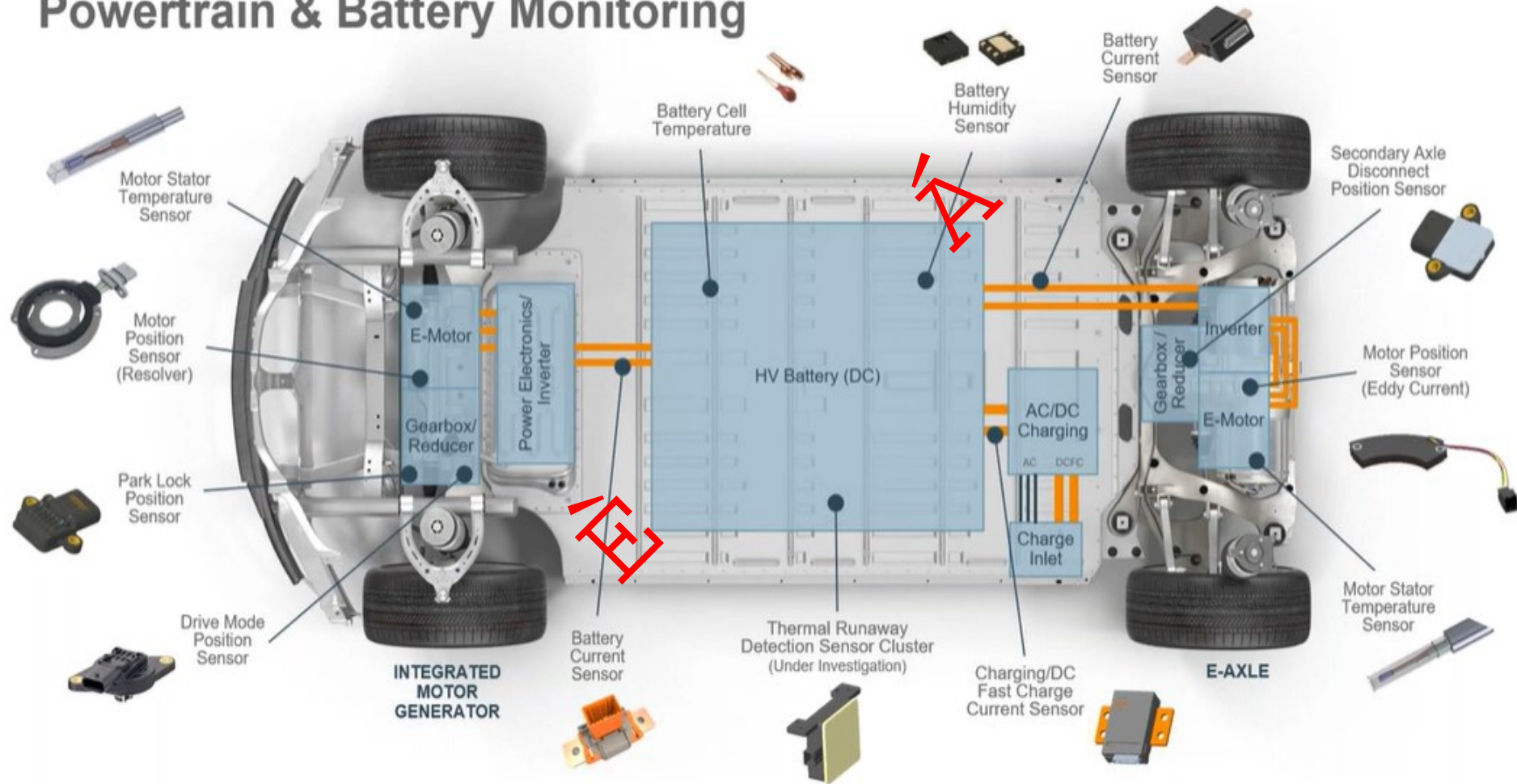
# Αισθητήρες EVs

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- Αισθητήρες Θέσης / ταχύτητας άξονα (resolver, Hall effect)
- Μέτρησης δινορρευμάτων
- Αισθητήρες ρεύματος επαφής (shunt resistors)
- Αισθητήρες ρεύματος μη παρεμβατικοί
- Αισθητήρες Τάσης
- Αισθητήρες θερμοκρασίας κινητήρα, μπαταρίας
- Αισθητήρες ανίχνευσης νερού



# TE Connectivity Electric Vehicle Sensors – Powertrain & Battery Monitoring





# Electric Vehicle Powertrain – Rotary Position (E-Motor) Sensors

## Single Coil Resolvers (SCR)



- Technology: Variable Reluctance via Rotor Geometry
- Highly Reliable and Proven Technology Across Automotive, Industrial and Aerospace Industries
- Angular Error <math>< \pm 0.25^\circ \text{ Mech}</math>
- Wet (in Oil / ATF) or Dry Environments
- $-40^\circ\text{C}$  to  $150^\circ\text{C}$  with  $165^\circ\text{C}$  Peaks

## Applications

- EV Traction Motors
- HEV Drivetrain



## Electric Vehicle Powertrain – Current Sensors

### Passive Shunt Current Sensor

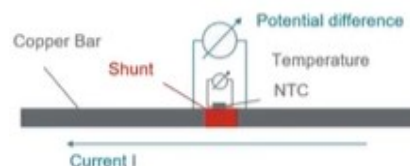
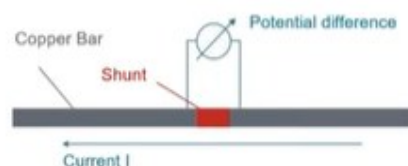


- Technology: Shunt Resistor with Optional NTC
- Analog Output
- -40 to 140°C Operating Temperature
- Low-cost PCB-less Design
- Redundant Versions Available
- Best in Class Low Temperature Coefficient Shunt Resistor

### Active Shunt Current Sensors



- Technology: Shunt Resistor With Galvanic Isolation, Signal Conditioning / Calibration Digital CAN Interface
- -40 to 105°C Operating Temperature
- Integrated Temperature Sensor Range: -45 to 125°C
- Overall Accuracy: 0.5%
- Peak Current Measurement Range Up To  $\pm 4000A$
- Up to ASIL C Functional Safety



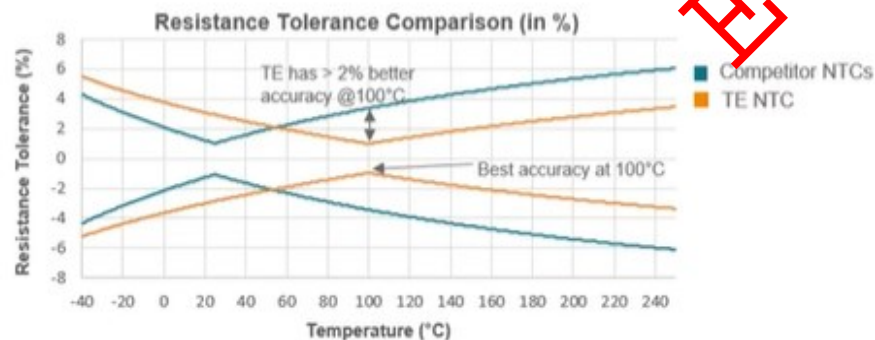


## Electric Vehicle Powertrain – Temperature Sensors

### E-Motor Stator Temperature Sensing



- Technology: Negative Temperature Coefficient (NTC) Glass Encapsulated Thermistor with Dual Wall PTFE/PFA Insulation
- Accuracy  $\pm 1\%$  @ 100°C (typ. Working Temperature)
- Available in Round or Rectangular Probe Head Geometries
- Moisture Resistant
- -40°C to 250°C Head Operating Temperature
- Can be integrated into Resolver Wire Harness



### Battery Cell/Bus Bar Temperature Sensing



- Technology: Negative Temperature Coefficient (NTC)
- Accuracy:  $\pm 1\%$  at 25°C
- Available with Epoxy or Glass Coating
- Wide selection of thermistor elements
- -40°C to 125°C Operating Temperature (typ.)
- Extensive TE Connector, Terminal and Heat Shrink Tubing Options





## Electric Vehicle Powertrain – Position Sensors

### T40MC2 Position Sensor N.A.



- 3D Hall (Magnetic) Technology
- Moving External Magnet
- Platform Design / Customizable
- Custom Programmed for your Application
- Linear / Rotary / Arc-Segment
- -40°C to 150°C and IP69K
- ASIL Options Available

### Angular Position Sensor



- 3D Hall (Magnetic) Technology
- Internal Magnet
- Platform Design
- Rotary Position
- -40°C to 150°C and IP69K
- SENT Output
- ASIL Options Available

### Applications

- Park Lock
- Drive Disconnect
- Shift Position (for multispeed gearbox)





Ευχαριστώ για την  
Προσοχή σας