



CONNECTIVITY SOLUTION GUIDE FOR SMART METERING

Smart meters can play a key role in the smart grid infrastructure and present a growth market globally that is predicted to grow to \$44.18 billion by 2026.¹ Replacing traditional meters with new, cellular-connected smart meters can let utilities reduce meter-reading costs, save resources, maximize uptime and offer customers greater service.

Within the smart metering market, two-way data communication is key. TE Connectivity's (TE) reliable, compact, high performance connectors, relays, antennas and sensors products support the development of smart metering solutions that will enable real-time data and can provide crucial insights for utilities companies as well as deliver a better customer experience.

LEARN MORE AT
www.te.com/smart-metering



CONNECTIVITY DESIGN REQUIREMENTS



Wireless Connectivity (Supporting 2-way communication)

Choosing the right wireless communications technology can address the challenges of multiple sources of potential interference and signal blocking.



Anti-theft

Smart meters can be vulnerable to physical tampering. Sensor technology and functionality should be considered to mitigate this risk.



EMI Protection

Choosing the right components can prevent EMI noise susceptibility and static affecting smart metering device performance.



Miniaturization

With more advanced functions designed into electric, water and gas smart meters, miniaturized components with lower profile heights, and small centerline or pitch spacing can allow flexibility in design.



Harsh Environment

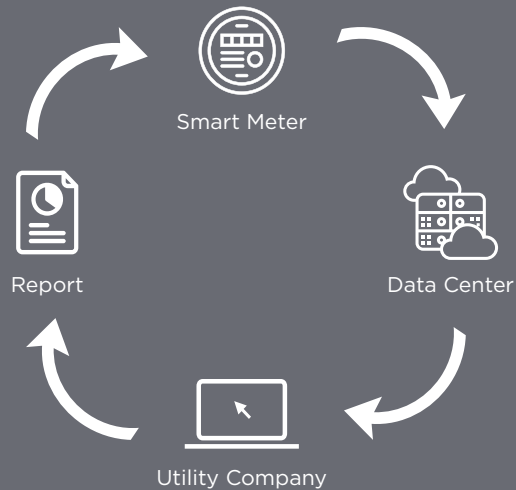
Ruggedized components and sealed connectors should be used where possible in devices that are commonly exposed to harsh weather, temperatures and ultraviolet (UV) light.



Power Control

Power consumption and control often are key factors in smart metering due to battery life requirements, sustainability goals or requirements, and costs.

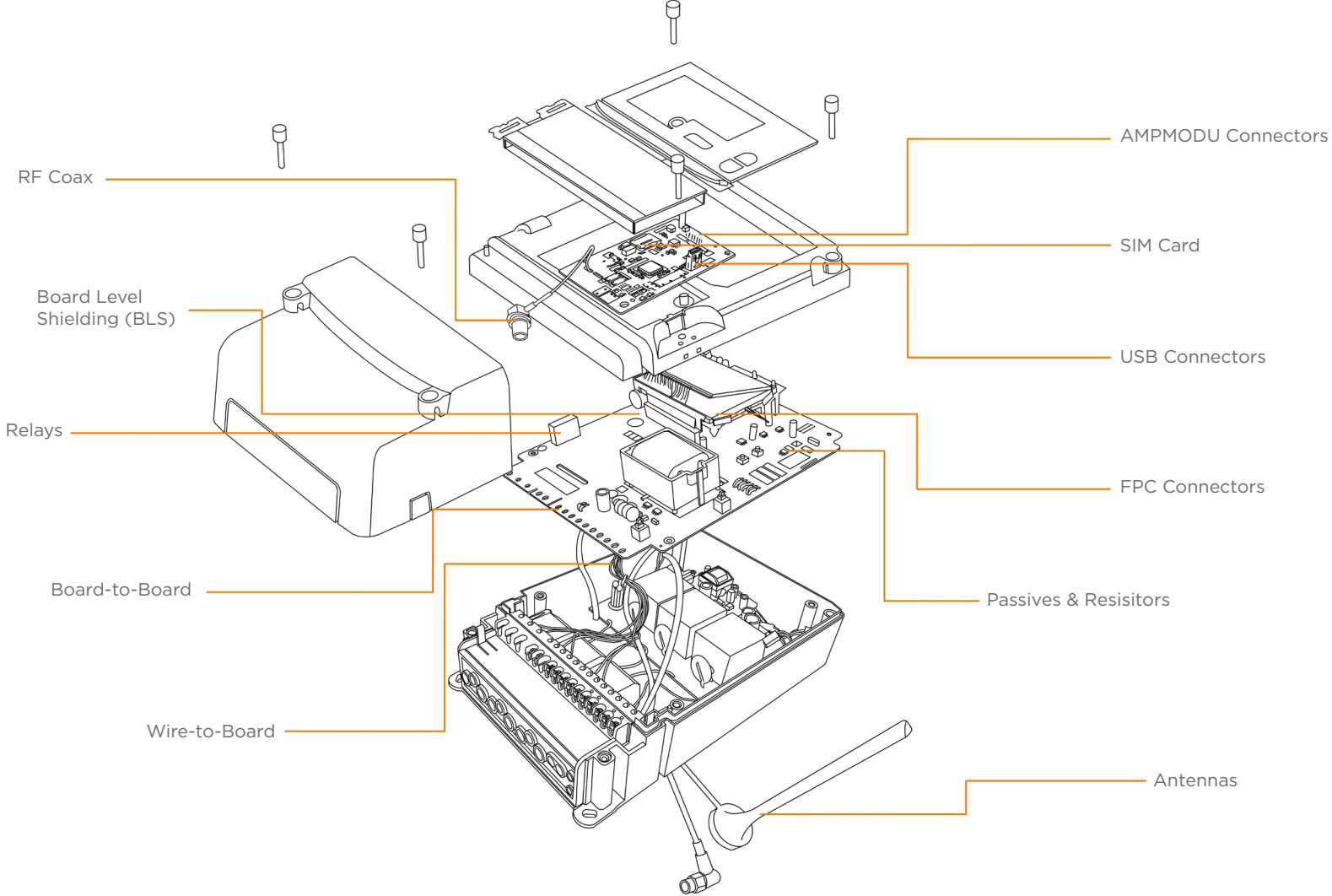
TWO WAY DATA COMMUNICATION IS OFTEN KEY



BENEFITS OF SMART METERS



A DEEPER LOOK INSIDE A SMART ELECTRIC METER



ANTENNAS AND RF CONNECTORS



Standard Antenna & Custom Antenna

Our antenna solutions can provide high-quality transmissions in wireless devices in a wide variety of frequencies including, but not limited to: Bluetooth, WLAN, cellular and ZigBee.



RF Connectors

RF connectors are designed to support performance in rugged, challenging environments, while maintaining low insertion losses, superb voltage standing wave ratio, and other mechanical and electrical functions.



Micro-Miniature RF Connectors

With a rugged, compact design, our space-saving micro-miniature coax connectors are engineered to support for high-performance microwave systems.



Board Level Shielding (BLS)

BLS from TE are stamped one-piece and two-piece metal cages that help provide isolation of board level components, minimize crosstalk, and reduce EMI susceptibility, normally without impacting system speed.

MEMORY SOCKETS



SO DIMM Sockets

SO DIMMs optimize speed and usability. A small outline dual inline memory module (SO DIMM) socket can enable reliable connection to standard memory modules.

WIRE-TO-BOARD



AMP CT Interconnect

TE's AMP CT connector system consists of an extensive product offering and broad industry usage.



AMP Mini CT interconnect

TE's 1.5mm AMP Mini CT connectors are miniature wire-to-board interconnect solutions.



High Performance Interconnects (HPI)

HPI offer vertical and horizontal (right angle) connector mounting for versatility, and the square-peg technology can enable this product to mate with many other like products in the industry.

INPUT/OUTPUT (I/O)



USB Connectors

TE's USB connector system accommodates the two differentially driven data wires that often can provide bi-directional, simultaneous signals for full speed (12 Mbps) or low speed (1.5 Mbps) used in universal series bus (USB) systems.

INTERNAL INTERCONNECT



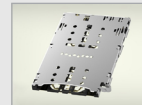
Flexible Printed Circuit (FPC)

As the market trends towards miniaturization, FPC connectors have been developed to address the challenges of this expanding market, which often demands smaller centerline or pitch spacing, lower profile heights, and lighter interconnect solutions.



FFC Connector

Our family of FFC connectors includes a variety of high density cable-to-board and cable-to-cable connectors designed to help support automated assembly.



SIM Card Connectors

TE is a leading source for SIM and UIM card connectors with a huge array of products and expertise to help customize products to address your requirements.



AMPLIMITE HD20 Crimp Snap-In

Our D-Subminiature connector portfolio is designed to address multiple applications along with specialized accessories that can provide many customers with an economical d-sub solution for many complex applications.



AMPMODU Connectors

Our AMPMODU interconnect system is the signal standard for Automation and Control applications. Reliable and economical, it includes board-to-board, wire-to-board and wire-to-wire connectors.

POWER



ELCON Mini

Pack more power into smaller spaces with our ELCON Mini power interconnects, which feature a small, 8mm height form-factor and support higher currents than most smaller sized solutions (up to 40 Amps per contact, 400 Volts AC or DC).



ELCON High Power Drawer

ELCON drawer interconnects are proven high-power drawer connectors that can offer ultimate customization for wire-to-wire, wire-to-board and wire-to-busbar configurations at up to 200A per contact.

PCB CONNECTORS



Spring Fingers

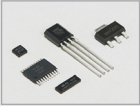
Spring fingers can be used for antenna feeds, low voltage electrical connections, or for grounding to prevent EMI noise and static caused by a speaker, motor, microphone, or any other vibration within an application.



Connectors for Eurocard

Our line of Eurocard products is available in board-to-board, wire-to-board, ribbon cable-to-board, and high-current connectors.

SENSOR



Anisotropic Magneto-Resistive (AMR) Sensors

Anisotropic Magneto-Resistive (AMR) sensors can be precise and contact-less devices that can measure the changes in the angle of a magnetic field as seen by the sensor. TE magnetic position sensors offer robust non-contact position to best address harsh environments.



Media Isolated Pressure Sensors

A media isolated pressure sensor measures gauge, differential or absolute pressure by isolating a silicon strain gage chip in air-evacuated oil with a stainless steel, titanium, or nickel alloy diaphragm. TE manufactures media isolated pressure sensors for a variety of applications.



Board Level Pressure Sensors

A board mount pressure sensor is typically mounted on a printed circuit board (PCB) and used to measure the pressure of gases or liquids. TE offers PCB mountable pressure sensors for gage, differential and absolute pressure measurements for various applications i.e. air flow, gas flow and barometric air pressure.



Pressure Transducers and Transmitters

TE can provide advanced design and manufacturing of pressure transducers and transmitters for numerous applications, industries, and production volumes. We offer various materials, outputs, sensor technologies, and third-party approvals to address various customer needs for measuring liquid or gas pressure.



RTD Sensor Elements

TE RTD temperature sensor elements are designed to help provide precise, stable measurement in extreme temperature applications. These elements can offer high value through proven design, ease-of-use, reliable performance and quick availability.



Piezoelectric Sensors

TE piezoelectric sensors can provide durable vibration, accelerometer, or dynamic switch elements for a wide range of markets and applications. Piezo sensors and transducers are available in various forms including film, cable, and miniature elements in standard and customized packages.

RESISTORS & RELAYS



Passives & Resistors

A resistor is a passive component that can reduce voltage or limits the current flowing through a circuit. This component can also absorb energy and dissipate this energy in the form of heat



RT Relays

RT is versatile power PCB relay family which can adapt to current rating 16A application with compact product size, it could withstand high inrush current 320A and can endure ambient temperature 105°C

ENERGY



Crompton Instruments Products

For 140 years, TE's Crompton Instruments Products have enabled engineers to measure and protect applications in a variety of industries ranging from car-charging stations, power generation, process control, and test and measurement to utilities, marine, and oil and gas.

TOOLING



Crimp Applicators

Designed to crimp an array of terminals from TE and other manufacturers, our OCEAN 2.0 applicators are engineered from high grade tool steels and processed through advanced CNC equipment for tight tolerances to deliver high repeatability and fast throughput.



Bench Top Terminators

Our extensive line of bench top wire crimping machines can provide flexibility, performance, and reliability to address low to medium volume wire processing.



Portable Crimp Tools

We offer a wide variety of portable crimp tools. Whether you need manual tooling or something with more power, TE has the tool to address your needs. Our SDE dies can be used across platforms from manual to pneumatic to battery powered.

i: Smart Meter Market to Derive Growth from the Presence of Several Large Scale Companies Across the World. FORTUNE Business Insights. 2021 Feb 12:

<https://www.globenewswire.com/news-release/2021/02/12/2174685/0/en/Smart-Meter-Market-to-Derive-Growth-from-the-Presence-of-Several-Large-Scale-Companies-Across-the-World.html>

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