



SMART METER

Product	Features	Benefits	Product Family
Antennas and RF Connector			
Standard Antenna and Custom Antennas	High reliability: high performance and isolation High efficiency: optimized throughput, minimal losses State of the art antenna laboratories and global footprint In-house testing and validation Implementation services An innovation leader Quick-turn designs and prototypes World class fully-integrated manufacturing capabilities	Ability to selectively and repeatably plate 3 dimensionally Space savings Ability to produce thin (0.15mm) traces Improved antenna performance Applied cost savings Fast time to market Flexibility for pattern changes during production Simple/fast/low cost tooling	Antenna
RF Connectors	Testing cable assemblies support up to 67 GHz and can provide the reliable, high performance required by test and measurement and other demanding applications One of the highest performing in the industry, with extremely low insertion loss and VSWR: We make it easy to get these products fast, with competitive pricing and fast delivery	Improved passive intermodulation (PIM) and return loss performance Space savings Easy installation Customizable designs	RF Coax Connectors
Board Level Shielding	Two-piece solution (minimum 0.85mm height) One-piece solution (minimum 0.7mm height) Standardized materials and thicknesses Use of standardized features includes: corner shape, carrier attachment, SMT (castellations), bending radii, pick and place features, through holes, locking holes, locking and contact dimples	EMI shields that minimize crosstalk in complex devices without affecting system speed	EMI Filters
Memory Sockets			
SO DIMM Sockets	Better performance while consuming less power System operating costs can be lowered due to higher performance and less power consumption per socket Higher chip density and pin count provides larger DIMM capabilities than DDR3 SO DIMM—transmitting more signal at one time One of the largest portfolios with a variety of heights and gold plating options	A small outline dual inline memory module (SO DIMM) socket can enable reliable connection to standard memory modules. SO DIMM sockets are designed for the latest DDR4 As well as previous versions DDR3, DDR2, DDR, and SDRAM memory modules. For DDR1 and DDR2 SO DIMM sockets, the pin count is 200 pins; for DDR3 SO DIMM sockets, the pin count is 204 pins; for DDR4 SO DIMM sockets, the pin count is 260 pins	Memory Sockets
Wire-To-Board			
AMP CT Interconnects	Two termination methods: IDC, Crimp IDC AWG 26-28 Crimp AWG 24-28 Circuits range from 2-20 single row and 20-40 dual row Kinked leg options for self-retention on boards Drawer and lattice series Panel mount configuration available RoHS compliant Component Program of Underwriters Laboratories Inc., File No. E28476 Canadian Standards Association, File No. LR 7189-133	AMP CT connectors are a miniature wire-to-board and wire-to-wire interconnect solution and has proven performance in its harness making capability. A variety of harness-making machines are available ranging from hand tools for low volume production to high-speed automatic crimping machines for medium to high volume productions AMP high-speed automatic crimping machines are easy to operate, eliminating the need for tedious work of changing parts inside the equipment to adapt to changes in harness styles Two types of housings are available, including Crimp and Mass Terminated (MT), which are preloaded with insulation displacement contacts The box or shrouded headers are highly resistant to scooping at mating/unmating	Wire-To-Board Connectors

Product	Features	Benefits	Product Family
AMP Mini CT Interconnects	Two termination methods: IDC, Crimp IDC AWG 26-28 Crimp AWG 24-28 Circuits range from 2-20 single row and 20-40 dual row Kinked leg options for self-retention on boards Drawer and lattice series Panel mount configuration available RoHS compliant Component Program of Underwriters Laboratories Inc., File No. E28476 Canadian Standards Association, File No. LR 7189-133	AMP Mini CT connectors are miniature wire-to-board and wire-to-wire connectors. Like the standard AMP CT connector series, these connectors are tailored for improved harness productivity and feature a compact design with contacts on 1.5 mm pitch Wire-side connectors can be used to produce a variety of harness styles by fully automatic high-speed assembling machines	Wire-To-Board Connectors
High Performance Interconnects (HPI)	Centerline: 1.0mm - 2.5mm Positions: 2-32 Square-peg technology enables product compatibility with industry standard products Broad portfolio that can be used anywhere a signal or low power needs to be routed through a device	High performance and high reliability Square-peg style enables interchangeability with competitors Header + COSI (crimp on snap in) connectors Polarized Positive latching with audible click feedback when mating Different colors available for system color coding AWG 30-24	<u>Wire-To-Board</u> <u>Connectors</u>
Input/Output			
<u>USB Connectors</u>	Supports USB 2.0, USB 3.1 Gen 1 and USB 3.1 Gen 2 types Deliver power up to 100W at 20V IPX8 waterproof and IPX4 splash proof options available Available in one of the smallest dual row SMT footprints, saving valuable board real-estate	Provide one interconnect solution for data, power and A/V Designed with a flippable and reversible mating interface Backward compatible to other USB connectors using converter cables or adaptors Distinctive design on the back of the receptacle shell for industry leading EMI performance Enhanced board retention features for added durability	USB Connectors
Internal Interconnect			
Flexible Printed Circuit (FPC) Connectors	Pitch: 0.25 to 1.25 pitch Pin counts: 3 to 60 pins Slant FPC insertion option to maximize PCB layout area Low profile (less than 1mm) economical product offerings Wide portfolio enabling high design flexibility with proven quality and reliability	Can accommodate FPC/FFC cable Available in ZIF and non-ZIF styles Variety of centerline spacing options Available in SMT and T/H PCB termination Requires no tooling Available in right-angle and vertical mounting orientations Right-angle version available with top, bottom or dual contact Solder pads and kinked legs for PCB retention Locking feature provides high retention force	FFC, FPC and Ribbon Connectors

Product	Features	Benefits	Product Family
Flat Flexible Cable (FFC) Cable Connectors	Cable stripping and plating eliminated High speed sequential application of multiple-crimp contacts Underwriters Laboratories Inc., File No. E28476 CSA Report No. LR 7189A-91 Single and double row housings: plain and latch Pin, receptacle, card edge, and solder tab contact options Capability of intermixing FFC cable and round wire contacts	Space savings over other wire-to-board connectors High-speed sequential application of multiple crimp contacts Field testable In-line manufacturing testable	FFC, FPC and Ribbon Connectors
SIM Card Connector	Large portfolio covering a wide range of styles and card sizes Connectors optimized for reliability Spherical contact points improve normal force Pre-loaded contacts Anti-retention features in the contacts Series offers the best possible design freedom with many products scalable in height within the same form factor Best possible applied cost by fully automated processing	Large, versatile portfolio offers the best product closest to your need Highly reliable connector technology helps customers reduce production line defect rates – ultimately reducing costs for quality control and service Very broad design freedom creates optimal possibilities for the design engineer to match the device's requirements Fully-automated processing leads to stable quality Global footprint means enhanced support for all regions	Memory Card Connectors
AMPLIMITE HD20 Crimp Snap-In AMPMODU Connectors	High density D type interface 20 through 100 contact positions Excellent EMI/RFI protection Protect your system with shields that mate before contacts, with ground mating first and breaking last Squeeze-to-release latches or jackscrew hardware available to fit your needs Assembly design offers latching and polarization Coupling shrouds permit ganging of smaller receptacle	Board connectors compatible with standard thru-hole flow solder and surface-mount reflow solder processes Recognized under the Component Program of Underwriters Laboratories Inc., file E28476 Listed and complies with UL 1863, Communication Circuit Accessories File No. E81956 Certified by Canadian Standards Association, File No. 1088108 AMPMODU MTE Connectors are available in IDC and crimp termination types and can utilize the discrete "Short Point" contact	<u>D-Shaped</u> <u>Connectors</u>
	and pin assemblies with guide ribs to form larger single or dual row latching connectors Available in three platings Swage option on posts provide retention in PC board High temperature option is SMT compatible to 265 degree wave	Latching capability provides positive retention between housings	AMPMODU
Power			
ELCON High Power Drawer Connectors	Supports high current up to 40A per contact with a value engineered stamped contact design Supports 400V AC or DC Feature small, 8mm height form-factor 2-position configuration is roughly the same size as the popular and low-profile HDMI multimedia connectors	Low resistance, highly reliable interface Positive metal latch retention Pull tab for power I/O applications* Coding contacts for sense/detect functionality* Touch-proof contacts and third pin for protective grounding*	<u>Rectangular Power</u>
ELCON High Power Drawer Connectors	True hot-plug, blind-mate connectors AC/DC, power and signal Wire-to-wire, wire-to-board and wire-to-busbar configurations Utilize high-performance CROWN BAND contacts 35A to 200A per power contact	Float mount for blind-mating as well as optional guide pins Extensive family with different housing options and contacts available Custom configurable Various mounting styles include PCB tails, solder cup, threaded, crimp and press-fit options	Rectangular Power

Product	Features	Benefits	Product Family
PCB Connectors			
Spring Fingers	Extensive off-the-shelf offering of spring fingers/ grounding products Available in heights as low as 0.4mm and up to 7.0mm Type: standard, side-protected, preloaded, ultra low-profile The preload function nearly doubles the working area of a common spring finger and increases contact force by 0.2N	Tiny, scalable, surface mountable contacts allow designers to fit grounding solutions almost anywhere	Board-To-Board Connectors
Connectors for Eurocard	Meets DIN 41612 and IEC 60603-2 Two-piece reliability Polarized housings Flame retardant Types B, C, D, F, M, Q and R Standard DIN sizes as well as half, third and expanded sizes Various solder post lengths and ACTION PIN and eye-of-needle contact tails Selective contact loading	Eurocard connectors are proven to provide reliable signal integrity (SI) and electrical performance in demanding applications The Eurocard line is available in board-to-board, wire-to-board, ribbon cable-to-board and high current connectors	<u>Backplane</u> <u>Connectors</u>
Anisotropic Magneto-Resistive (AMR) Sensor Media Isolated Pressure Sensors	Excellent repeatability Fast response time High switching frequency Robust, low cost, rotary and linear encoders Patented temperature independent switching field Oil-filled stainless steel pressure sensors suitable for use with liquids or gases Amplified ratiometric output signals available for simplified integration and increased performance over temperature Digital output protocols available include I ² C or SPI interfaces Sensors available in gage, absolute, differential, sealed gage and vacuum gage Threaded, flush mount, weldable and O-Ring mount	Dependence on the magnetic field direction, almost independently on the actual magnetic field strength, mimimizing temperature and aging effects Ideal for harsh environments due to precise measurements with homogenous magnetic stray fields Pole pitches of 1, 2, 2.5 and 5mm available; different pole pitches on request TE Connectivity (TE) manufactures media isolated pressure sensors for a variety of applications Mechanically, these sensors are available with various process connections, diameters, and materials Sensors can be configured in various pressure ranges as well as gage, vacuum gage, absolute, and differential pressure	Pressure Sensor Types
Board Level Pressure Sensors	process connections available Small size and low weight mV, amplified analog, or digital outputs Digital I ² C and SPI formats supported Supply voltages from 1.5 to 5.0 VDC Uncompensated or compensated MEMS-based sense element Through-hole or surface mount Ideal for dry, non-corrosive gasses Gel-coated versions for harsh environments Various configurations available with temperature outputs	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 Sensor Types

Product	Features	Benefits	Product Family
Pressure Transducers and Transmitters	Pressures from 1 to 100,000 PSI Analog and digital output signals Standard configurations or custom designs Approvals for various hazardous locations Compatibility with a wide range of liquids and gases Measurements in gage, sealed gage, absolute, differential, and compound pressure types Miniature designs Submersible pressure transducers in stainless steel or PTFE/PVDF Intrinsically safe options available	TE can provide advanced design and manufacturing of pressure transducers and transmitters for numerous applications, industries, and production volumes TE offers various materials, outputs, sensor technologies, and third-party approvals to address various customer needs for measuring liquid or gas pressure	<u>Pressure Sensor</u> Types
RTD Sensor Elements	Precise measurement in extreme environments Ease of application and use Engineered to withstand extreme temperatures -200 to +600°C International industrial standards (IEC 60751:2008) Greater engineering efficiency due to linear output Complete range for numerous applications	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	RTD Sensors
Plezoelectric Sensors	Flexible and light-weight Operating temperatures from -40 to 85°C Wide frequency and dynamic ranges High mechanical strength and impact resistance Compatibility for electrical to mechanical conversions Available in various thicknesses and sizes	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	Sensors
Resistors and Relays			
Passives & Resistors	Can absorb energy and dissipate energy in the form of heat Resistance to the flow of electrons is determined by the conductive materials with which it is built The materials used in the composition of a resistor perform a critical role in enabling performance reliability and stability, particularly for high-voltage, high-power, high stability/accuracy, or high-current applications	Fixed resistors (including surface mount, through-hole, and chassis mount), offer one resistance value and are used in almost all applications Variable resistors (including potentiometers and trimmer potentiometers, also known as trim pots) offer broad resistance values and are predominantly used to control either current or voltage by changing the resistance value	Passive Components
RT Relays	Slim line 10x6mm, low profile 5.65mm and min. board-space 60mm² Switching current 2/5A, switching power 60W/62.5VA and switching voltage 220VDC/250VAC High dielectric and surge capability up to 2500Vrms between open contacts and 2500Vrms between coil and contacts Low coil power consumption, 140mW standard, 100mW for high sensitive version, 50mW for ultra high sensitive version and 100mW for bistable version High contact reliability up to 10.000.000 operations Very low and stable contact resistance THT, SMT design for reflow soldering + providing a smaller footprint option High mechanical shock resistance up to 50g functional	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	Relays

Product	Features	Benefits	Product Family
Energy			
Crompton Instruments Products	DIN 96 enclosure Programmable backlit LCD screen Voltage IN-OUT connections CT current measurement 0.1 A Programmable VT, CT ratios Modbus™ RTU as standard 2 pulsed outputs with led indication PF bar indicator 3P4W, 3P3W, 1P2W system types Individual harmonics to 63 rd	Cost efficient Plug and socket connections Easy installation RJ12 wiring solution	<u>Crompton</u> <u>Instruments</u>
Tooling			
OCEAN 2.0 Crimp Applicators Benchtop Crimping Machines	Robust fine adjust wire crimp height with range of 1.5 mm in increments of 0.01 mm State-of-the-art crimper manufacturing for even tighter tolerances Precision machined strip guide customized for each terminal application Spring loaded terminal drag designed for easy loading/unloading Tool-less precision crimp height adjustment for easy setup Wide range of wire processing solutions to handle a wide range of wire sizes, including challenging small wire applications Available with and without crimp quality monitoring (CQM II) Tool-less precision crimp height adjustment for easy setup Egonomic features for enhanced operator comfort	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 Extensive line of bench top wire crimping machines provide flexibility, performance, and reliability for low to medium volume wire crimping	Crimp Applicators Benchtop Crimping Machines
Portable Crimp Tools	Premium crimp tools include the appropriate crimp die configuration, integral locating, and integral straightening features that allow terminals or contacts crimped in these tools to meet all feature requirements in applicable TEC application (114-) specifications Most premium crimp tools include an adjustable insulation crimp height feature and the CERTI-CRIMP ratcheting feature, which prevents the ratchet from releasing until the wire crimp jaws bottom within 0.001. This helps provide consistent repeatability of the crimp Commercial crimp tool die assemblies are designed to meet wire crimp height requirements per applicable TEC application (114-) specifications. Other feature requirements may or may not be met Commercial crimp tools feature interchangeable SDE (Standard Die Envelope) die assemblies and an adjustable ratcheting feature	TE Connectivity (TE) provides a wide variety of portable crimp tools. Whether you need manual tooling or something with more power, such as our pneumatic or battery-powered options, we have the tool to meet your production volume requirements	Portable Crimp Tools

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