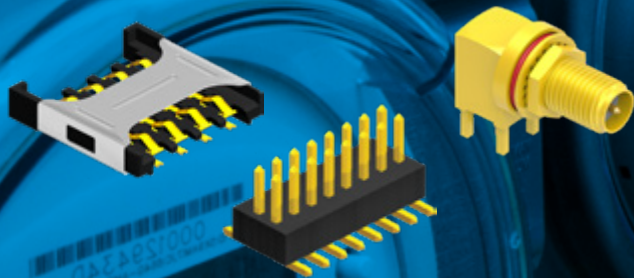


The logo for GRADConn, featuring the company name in a bold, white, sans-serif font. The text is enclosed within a blue, stylized oval shape that has a slight 3D effect. The background of the logo is black, and a vertical yellow bar is positioned to the right of the oval.

GRADConn

Comprehensive Connector Solutions for Smart Meters



GradConn & Smart Meters

The popularity of smart meters with built-in intelligence and two-way communications continues to rise because of the benefits they offer both to utility companies and to consumers. As a result, wireless connections are becoming increasingly important as a critical component to share this information. Read on to see how GradConn's Nautilus range of coaxial connectors and cable assemblies provides the perfect connectivity solution for smart meters.

As meters become smarter, they take on more complex tasks like time-of-use billing and automatic meter reading. These call for more powerful microcontrollers, wireless radios, info-rich LCDs, and real time clocks to supplement the analogue front end. While first-generation meters use multiple chips to fulfil these functions, the Utilities are looking to component and meter suppliers to provide more highly integrated devices to help drive down costs and footprint.

Recent trends are imposing further challenges on smart meter design. In the past, meters could be protected from environmentally challenging locations by installing them within purpose-built cabinets that provide all protection necessary to handle the prevailing conditions.

Nowadays, though, constraints on space and cost mean the luxury of this outer enclosure is often no longer an option. The onus falls instead onto meter manufacturers to build ruggedisation directly into their meter designs. This becomes a critical issue, for example in Australia, where household water meters are typically installed outdoors in back gardens – and when it does rain, it rains heavily.

Connector Solutions



Waterproof Coaxials

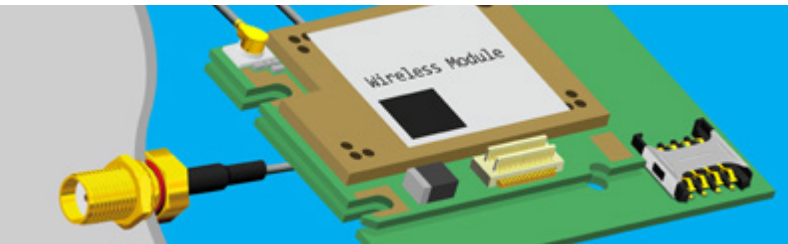
GradConn offer a range of connectors that help overcome issues in terms of communications capability, ruggedisation and miniaturisation.

GradConn's Nautilus range of IP67 and IP68-rated RF coaxial cable assemblies give proven protection from moisture and particle ingress, mated or unmated. They achieve their IP67 and IP68 ratings through internal and external O-rings, preventing ingress through the centre of the connector or the panel cutout.



SMA connectors are available as rear-mount, front-mount, reverse-polarity rear-mount, and reverse-polarity front-mount. Other IP-rated connector types for bulkhead mounting include TNC, N and BNC. PCB mount options are also available.

The bulkhead connectors are specified as part of a complete cable assembly, and bespoke configurations can be ordered accordingly. These include cable options to 3GHz, and board-mounting micro connector choices such as IPEX MHF (an Hirose U.FL alternative), Hirose H.FL, MMCX and MCX, straight or right-angle plugs. MMCX connectors are increasingly favoured by the smart meter industry for their ruggedisation.



The cable assemblies can handle GSM, GPS, Wireless LAN (WLAN), Wi-Fi, Zigbee Z-Wave, EnOcean and Bluetooth wireless communications protocols.

For other configurations, and a wider choice of micro connector types, a useful Coaxial Cable Assembly Builder is available on the GradConn website. This allows engineers to rapidly configure a solution that meets their requirements perfectly.

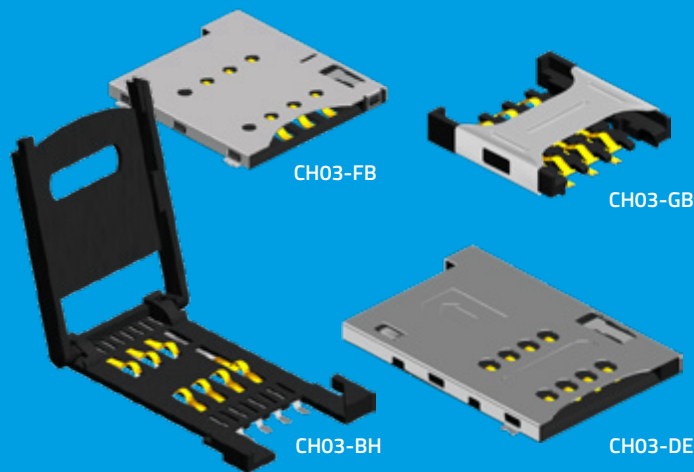
SIM Card Connectors

Certain types of smart meter communicate over mobile phone networks, using SIM cards to do so. GradConn helps smart meter builders meet these requirements with a wide range of Mini, Micro and Nano SIM card connectors available in Push-Push, Push-Pull, Hinged, Dual and Contact configurations. SIM Connectors are available with 6 or 8 contacts and optional PCB locating pegs and metal hold downs. Card detection switches allow electronic detection of SIM card insertion or extraction.

These options give engineers a wide choice for both 'easy access' (at the edge of the instrument) and 'fit and forget' (enveloped within in instrument) designs.

Push-pull and push-push connectors are popular for 'easy access' designs. For Micro SIM cards with 6 or 8 contacts, popular options include the CH03-FB (push-pull card insert) or CH03-GB, which is push-push with a normally closed switch. The push-push CH03-DE provides a similar option for the larger Mini SIM cards.

For Mini-SIM 'fit and forget' installation within the meter, the CH03-BH hinged connector with 6 or 8 contacts and a card detect switch is the perfect solution.



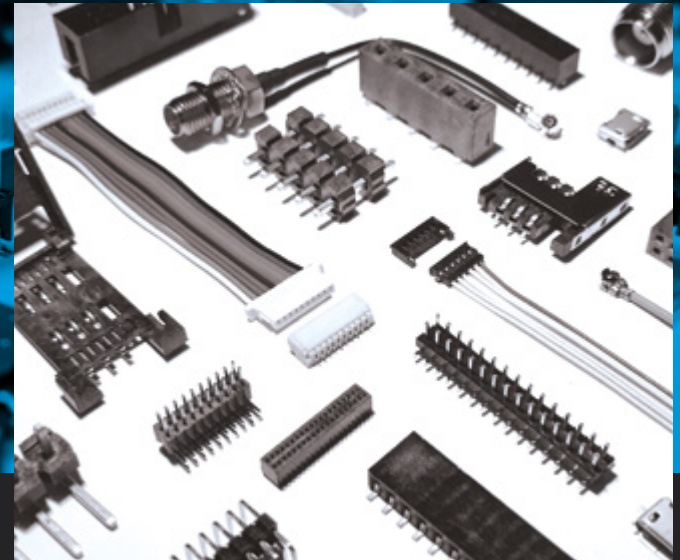
See the full range at GradConn.com/Products/SIMCardConnector

Board to Board Connectors

In addition to Coaxial and SIM connector products, Gradconn have an industry-leading board to board connector range, in particular fine pitch 1.00mm-1.27mm versions that are ideal for smart meters. With smaller designs being developed, these micro connectors are great for space saving.

As items that can become visible on the Internet and communicate with cloud-based servers and processing services, smart meters can be considered as typical Internet of Things (IoT) connected devices. GradConn's ongoing experience with their customers shows that this is part of an ever-increasing and wider trend of making products IoT-ready by building in intelligence and connectivity.

GradConn is in an excellent position to facilitate hardware designs for not only smart meters, but also for many other IoT-ready products, with connectors from a single source.



GRADCONN

Board to Board Connectors
Coaxial Cable Assemblies
SIM Card Connectors
Wire to Board Solutions

www.gradconn.com