

D1-SMART GRID PRODUCTS

Smart meters Overview Utility companies worldwide have begun deploying smart meters to service residential and commercial/ industrial markets. Smart meters deliver a range of benefits including lower operational and capital expenses, support for new services, and improved operational control. Smart meter requirements Deployment of smart meters is far from a “one-size-fits-all” undertaking. Manufacturers must account for the varying regulatory requirements of each region, as well as the different functionalities and services required for different markets. In North America, for example, automated meter reading (AMR) regulations dictate the frequency of meter reading and data transmission. They also specify the amount of data that must be retained locally at any given point in time. Because communications are not always reliable, some of these regulations require utilities to store two or more transmissions to meet billing requirements. This requirement increases the amount of local on-chip memory needed for smart meter ICs. As a result, the regulatory pressures of specific jurisdictions have a direct impact on the design of smart meters down to the chip level. Another major driver of smart meter functionality is improving local antitampering capabilities. This is especially important in developing markets where electricity theft accounts for a large percentage of overall power usage. The ability of solid-state electricity meters to detect and prevent tampering can significantly improve control and cost recovery for utility companies. Here again, high-level antitampering objectives are both driving the adoption of solid-state metering and dictating required feature sets at the chip level. Finally, the promise of improving service to customers represents an important goal of smart metering, especially over the long term. By enabling customers to better manage their own energy usage through incentive-based programs—such as direct load control, interruptible rate agreements, and demand bidding/ buyback—smart metering can help utilities manage overall energy consumption patterns and cope with peak-demand challenges. With the right capabilities built into chip-level solutions, smart meter deployments can effectively lay the groundwork for expanded customer-service functions, such as wireless integration with thermostats to automatically adjust usage during peak-demand periods.