

# Microcontrollers for Power Line Communication (PLC) in Data Concentrators



Power is generated, transmitted, converted and distributed through the interconnected assets of the worldwide electric-power infrastructure.

Advanced metering infrastructure (AMI) technologies provide a means necessary to communicate energy usage from many meters to a central database for billing, troubleshooting and analyzing. Data concentrators at several points in the infrastructure act as nodes within the network, sending information securely to utility servers.

Neighborhood Area Networks (NAN) and Wide Area Networks (WAN) both connect to the data concentrator, which push intelligence to the edge by integrating, organizing and aggregating information. These technologies allow for smart metering, better and more visible inventory management and an optimized network for performance management and benchmarking. Power Line Communications (PLC), a key NAN technology, is a global technology with worldwide interest in its development. The ability to modulate communication signals over existing power lines enable devices to be networked without introducing any new wires or cables. This capability is extremely attractive across a diverse range of applications, including data

concentrators, which can leverage greater intelligence and efficiency through networking.

AMI brings more flexibility to metering systems and networks. The important role of the data concentrator demands a platform to support many communication standards with flexible, scalable and field-approved technologies for a tailored solution.

## **Why partner with TI Smart Grid Solutions?**

Choose from the broadest selection of low-power microcontrollers that optimize the performance of your data concentrator within your energy solution, from generation to consumption. TI Smart Grid Solutions deliver:

- Innovation, expertise and support covering the functions of the data concentrator
- Comprehensive software support that adapts to evolving standards and enables quick differentiation and customization
- Solutions that offer design simplicity and that are compliant with standard protocols

## **Microcontrollers for your PLC design in data concentrator**

With TI's diverse portfolio of processors, designers are given several design options to differentiate and drive innovation from low- to high-end data concentrator designs.

### **PLC standards and recommended TI products**

Standard	Technology	Band occupied	Data rate range	Processor	AFE
IEC 61334 (G1)	SFSK	60–76 kHz	1.2–2.4 kbps	TMS320F28027 TMS320F28PLC83	AFE030 / AFE031
PRIME	OFDM	42–90 kHz	21–128 kbps	TMS320F28PLC83 / Concerto™	AFE031
ERDF G3	OFDM	35–90 kHz	2.4–46 kbps	TMS320F28PLC83 / Concerto	AFE031
G3 FCC / P1901.2	OFDM	145.3 – 478.1 kHz	Up to 145 kbps	Concerto	Discrete / AFE032
PLCLite (TI proprietary)	OFDM	42–90 kHz	2.4–21 kbps	TMS320F28PLC35 TMS320F28PLC83	AFE031
FlexOFDM (TI proprietary)	OFDM	Sub 10 kHz to FCC	2.4–128 kbps	TMS320F28335	AFE031

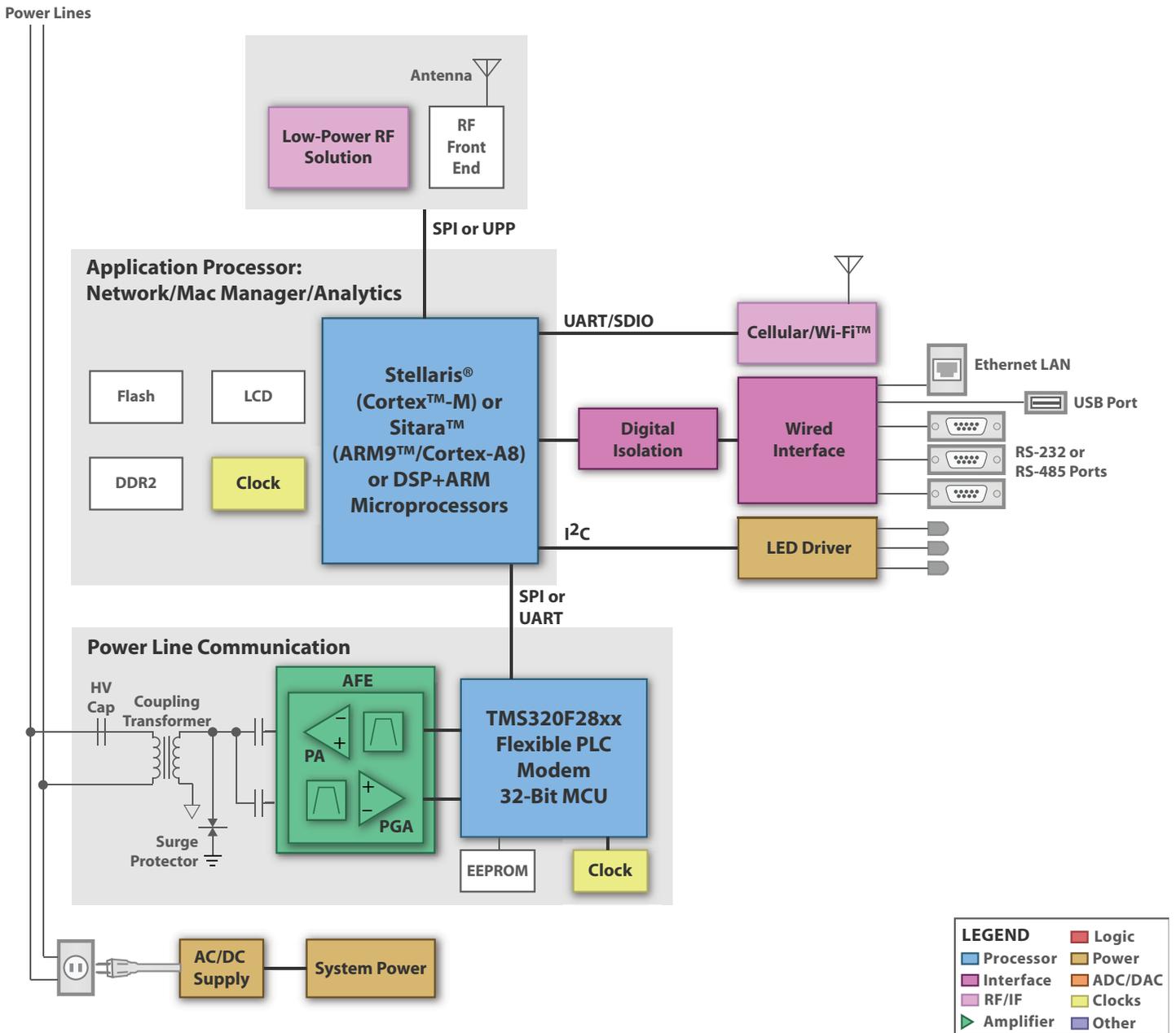
## **Getting Started**

- Learn more about TI Smart Grid Solutions: [www.ti.com/smartgrid](http://www.ti.com/smartgrid)
- See more on TI Data Concentrator Solutions: [www.ti.com/data-concentrator](http://www.ti.com/data-concentrator)
- Smart Grid Solutions Guide: [www.ti.com/smartgrid-guide](http://www.ti.com/smartgrid-guide)

## **Whitepapers**

- Data Concentrator System Solution: [www.ti.com/lit/slyt431](http://www.ti.com/lit/slyt431)
- Developing Robust Power Line Communications (PLC) with G3: [www.ti.com/lit/slay021](http://www.ti.com/lit/slay021)
- TI Delivers Flexible Power Line Communications Solutions: [www.ti.com/lit/sly026](http://www.ti.com/lit/sly026)

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▲ Data concentrator system block diagram – super set

See more on TI Data Concentrator Solutions:  
[www.ti.com/data-concentrator](http://www.ti.com/data-concentrator)

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### Applications

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