

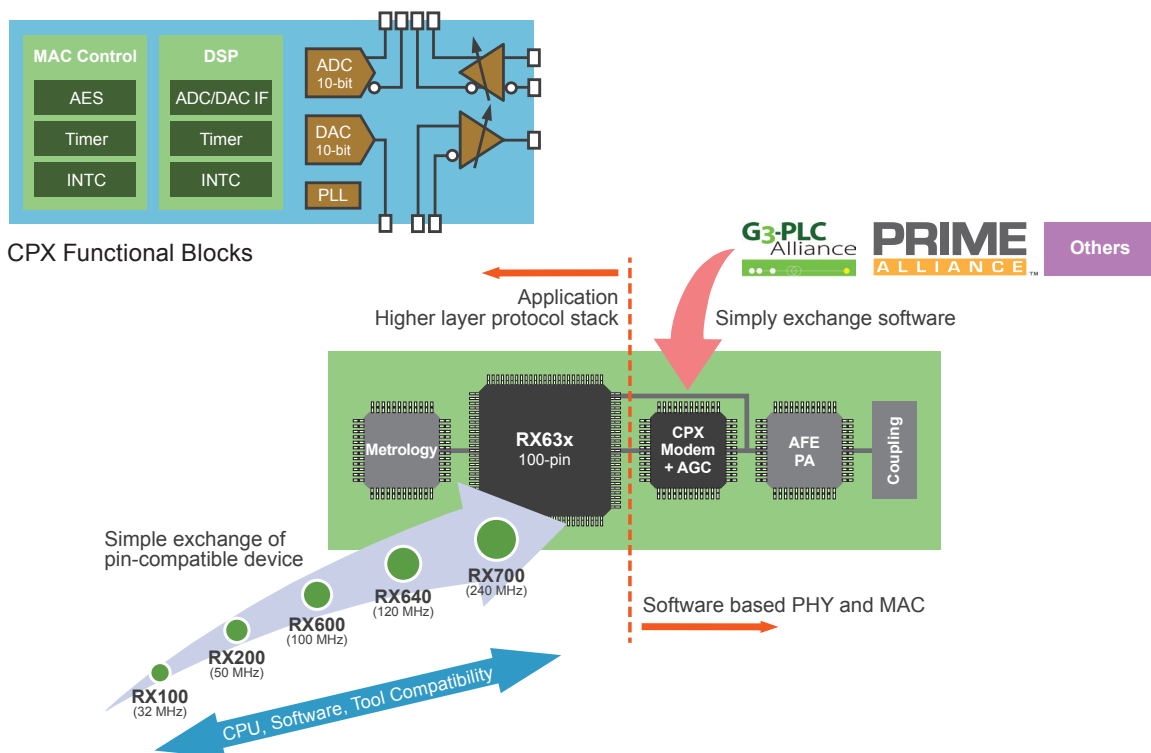
# Cool Phoenix

## Flexible PLC Modem Solution

*One design supporting multiple standards:* The flexible PLC modem solution is based on a highly integrated narrowband modem system-on-chip (“Cool Phoenix” or CPX), integrating a MAC controller and high performance digital signal processor (DSP) for physical layer (PHY) implementation. It is combined with an embedded analogue front end (AFE) that includes an adaptive gain amplifier with automatic gain control (AGC) functions and an embedded AES128 hardware security engine. The solution offers leading communication robustness over power lines, showing unique sensitivity characteristics. Furthermore, it shows unique overall power consumption.

### A single hardware design can cover multiple smart meter platforms by:

- Pin compatibility of a wide range of scalable Renesas RX MCU families
- Software compatibility across the Renesas RX MCU families
- Software configurable PLC modem supporting multiple standards including PRIME and G3



In combination with a wide range of application processors this solution offers the maximum of flexibility.

Renesas' market leading, software configurable orthogonal frequency division multiplexing (OFDM) solution has been awarded the "Smart Metering Technology of the Year Award 2013". The award is recognition of Renesas' achievement in implementing a future proof PLC modem solution that meets today's most important market requirements.



- Highly flexible concept
- Flexible standards support
- All layers remotely programmable assuring upgrade ability to future versions of existing and emerging standards

## CPX Features

- High performance DSP for PHY
- Roadmap for higher performance (future proof to implement new standards)
- AFE integrated with adaptive gain amplifier and AGC function
- Hardware security engine (AES 128)
- Very low power operation
- Small package 48-pin QFP
- Superior dynamic range

## Benefits

- Enables as single meter platform ready to support multiple standards
- PRIME and G3 are supported standards today
- Flexible choice of application processor
- Optimized HW partitioning
- Assuring optimum output performance and robustness
- Significant reduction of system Bill of Material
- Fully certified protocol stacks with well documented API to be provided

## Evaluation and Development Tool

- Separated power supply unit
  - » Safe operation
- Optional external PSU
  - » Testing without PSU design influence
- Assembled RX630 host MCU
  - » Simple evaluation setup
- Evaluation board piggy backing
  - » High flexibility
- Serial connector
  - » Evaluation with any application boards
- E1 debugging interface
  - » Development support
- Multiple USB connectors
  - » I/F to modem and host MCU's
- Programmable protocol stacks
  - » One tool for multiple standards



Before purchasing or using any Renesas Electronics products listed herein, please refer to the latest product manual and/or data sheet in advance.

