STarGRID™ is a unique flexible, scalable and future-proof narrowband power-line communication system-on-chip platform to effectively address demanding smart metering and smart grid application requirements and related standards. By optimizing power consumption and system cost, the STarGRID platform is ideal for many green applications, including smart-energy control in photovoltaic modules, home area networking and street lighting management.

**KEY FEATURES**
- Fully-integrated narrowband power-line networking system-on-chip
- High-performance DSP with embedded programmable turnkey firmware for multiple-modulation management
- Convolutional correction coding
- Programmable bit rates up to 128 Kbit/s
- Channel quality estimation
- Host UART/SPI controller
- I²C/SPI external data memory interface
- High-speed memory controller for optional code execution from external memory
- Watchdog timer
- On-chip 128-bit AES encryption accelerator
- Fully integrated analog front end
- High-sensitivity receiver
- High-linearity transmitter
- Embedded single-ended power amplifier delivering up to $1 \text{A}_{\text{RMS}}, 14 \text{V}_{\text{PP}}$ output
- Embedded temperature sensor and current control features
- Suitable for applications compliant with CENELEC EN50065 and FCC specifications
- -40 to +105°C temperature range
- QFN48 exposed pad (7 x 7 mm)

**STANDARDS SUPPORTED**
- PRIME
- Meters & More
- IEC 61334-5-1

**KEY APPLICATIONS**
- Smart metering and smart grids
- Street lighting control
- Smart energy management
- Home area networking
- Building automation

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A COMPLETE PLATFORM

The STarGRID platform has been developed to meet specific standards and market requirements. The ST7570 power line networking system-on-chip features S-FSK modulation up to 2.4 Kbit/s and integrates a full turnkey solution based on the IEC 61334-5-1 standard with advanced communication features to address very cost-effective, automatic meter-reading services.

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The high-performing ST7590 uses very robust OFDM modulation up to 128 Kbit/s, fully compliant with PRIME protocol standard specifications. The ST7580 performs innovative dual-channel n-PSK modulation with high-performance convolutional coding and Viterbi decoding up to 28.8 Kbit/s, and it is suitable for different protocol implementations, to satisfy communication needs for customized smart metering and many green applications, but also smart-energy control in photovoltaic modules, factory and home automation, home area networking and street lighting management.

STARGRID SOC BLOCK DIAGRAM

<table>
<thead>
<tr>
<th>Part number</th>
<th>Modulations</th>
<th>Max. bit rate (Kbit/s)</th>
<th>Embedded protocol stack</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST7570</td>
<td>S-FSK</td>
<td>2.4</td>
<td>IEC 61334-5-1 PHY, MAC</td>
<td>QFN48 (7 x 7 mm)</td>
</tr>
<tr>
<td>ST7580</td>
<td>FSK, BPSK, QPSK, 8PSK</td>
<td>28.8</td>
<td>ST DLL, custom stack</td>
<td>QFN48 (7 x 7 mm)</td>
</tr>
<tr>
<td>ST7590</td>
<td>OFDM</td>
<td>128</td>
<td>PRIME PHY, MAC, CS, IEC 61334-4-32 LLC</td>
<td>TQFP100 (14 x 14 mm), QFN48 (7 x 7 mm)</td>
</tr>
</tbody>
</table>

Order code: FLSTARGRID1116

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