Introduction to IT900A

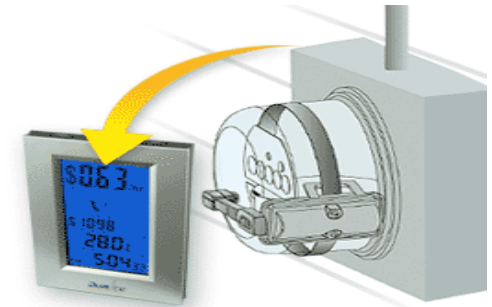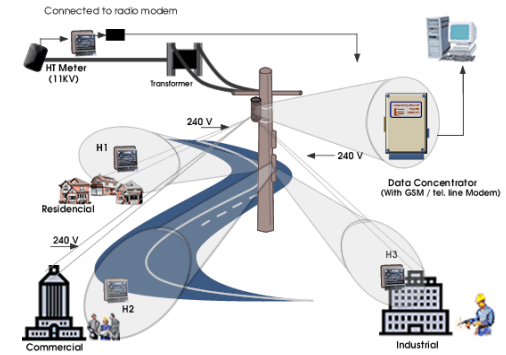## DCSK Turbo

YITRAN TECHNOLOGIES

IT900A Main Features

- Low-cost Powerline Communication (PLC) modem and application solution in a single chip.

- Data rates (PHY) up to 500 Kbps FCC and ARIB, 150 Kbps in CENELEC-A band and 50 Kbps in CENELEC-B.

- Implements DCSK and DCSK Turbo Modulation - Natural extension to DCSK based technology.

- Fully backward compatible with IT700 and IT800 Series.

- Incorporates Yitran's high performance Data Link Layer (DLL), Network Protocol (Y-Net) and extremely robust Physical Layer (PHY).

- High in-phase & cross-phase connectivity. Full coverage even under adverse line conditions.

- Embedded AFE (external Amplifier is not required!).

Target Applications

- **Smart Grid Applications:**
  - Automated Meter Reading (AMR)
  - Advanced Meter Management (AMM)
  - Demand Response & Real-Time pricing

- **Smart Home & Energy Management:**
  - Home & Building Automation
  - Home Appliance Control & Diagnostics
  - Security and Access Control
  - Environmental Control

- **Commercial Applications:**
  - Street Light Control
  - Solar Panels Monitoring
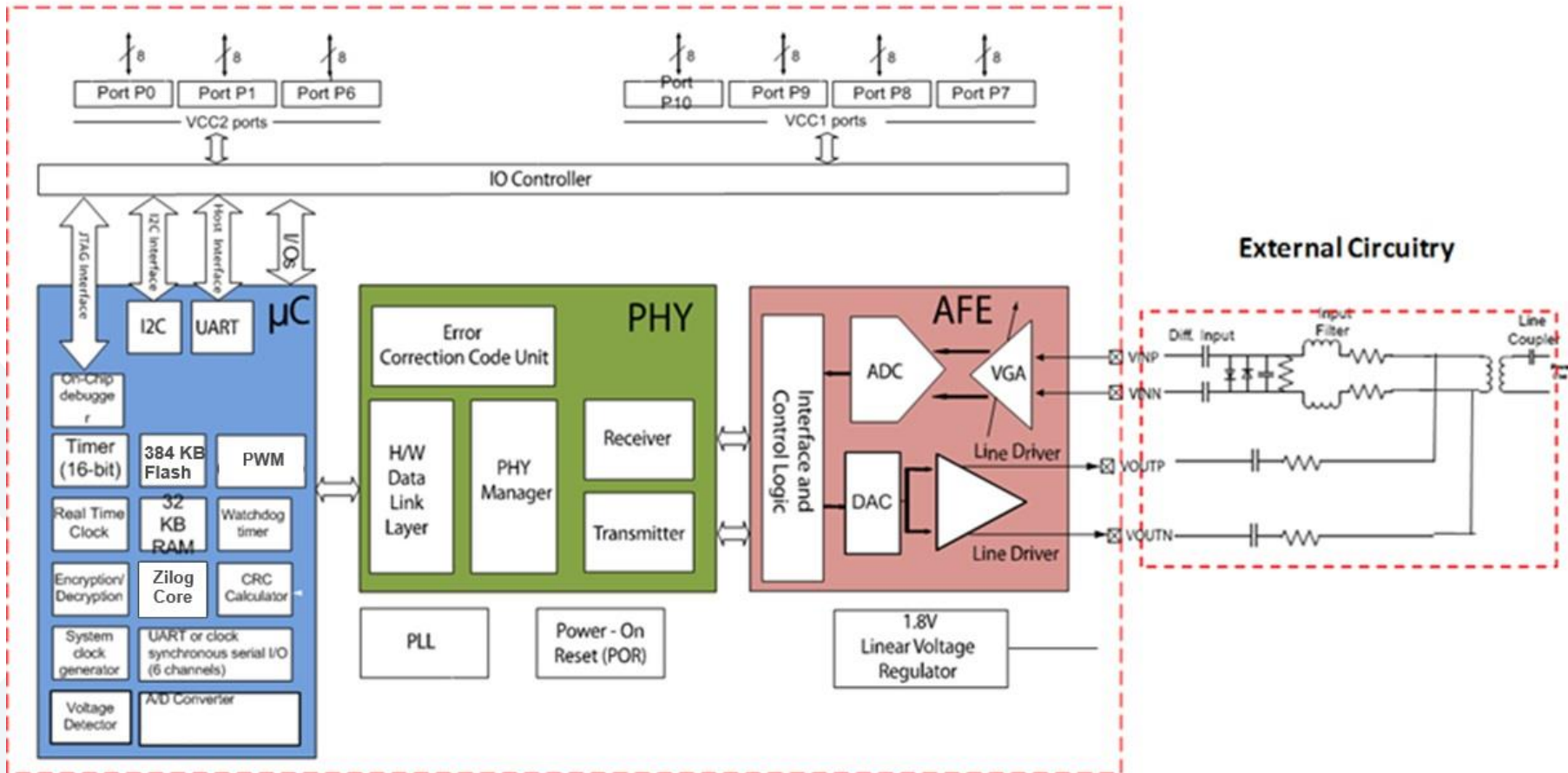 - Vending Machine Control
  - Signage Control

IT900A - DCSK Turbo Specification

- Physical Layer Rate: 500 kbps FCC,150 kbps CA and 50 kbps CB
- Dynamic Range: >100dB
- SNR for AWGN < -7dB
- SNR for CW Noise < -40dB
- House Coverage ~ 100%
- Range > 2 Km
- Network Size: 2000 nodes
- Number of Networks: 1000
- Power Consumption in Rx < 300 mW
- Single supply voltage: 3.3V
- Package: QFN64
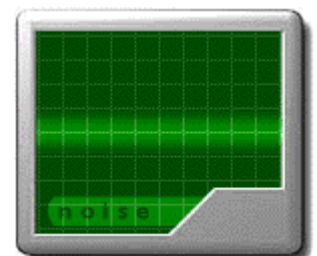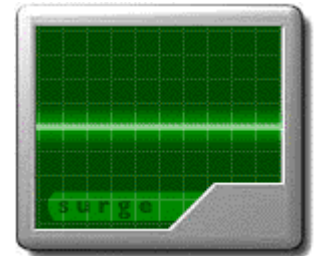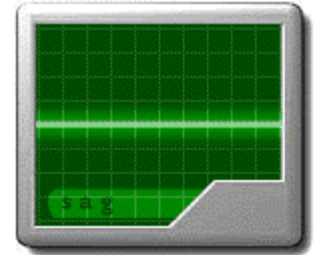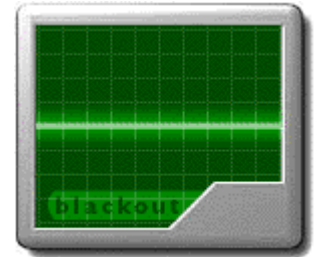
Proven as the most robust technology available today

IT900A Block Diagram

Physical Layer Basics

- Modulation: Patented DCSK and DCSK Turbo implementing advanced coherent spread spectrum modulation techniques

- Error Correction: Forward short-block soft decoding error correction mechanism and CRC-16

- High immunity to signal fading, noise, impedance modulation and phase/ frequency distortions

- Symbols: Spread Spectrum, fully compliant with worldwide regulations (FCC, CENELEC A&B, ARIB)

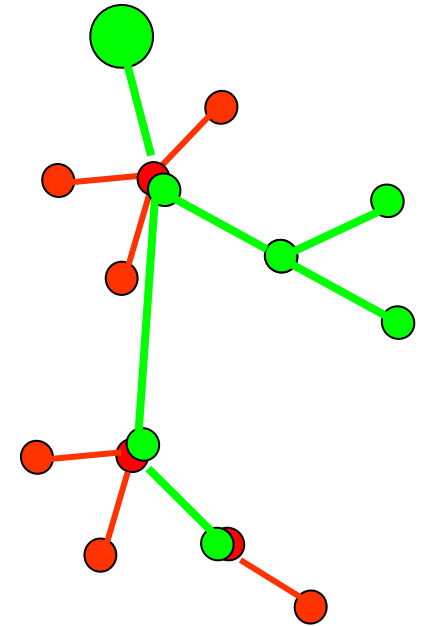- Preamble: DCSK based variable length preamble

MAC Layer Basics

- Channel Access:
  - Adaptive Optimized CSMA/CA with Transmission Priority and Delay Control Mechanism.
- Auto Rate Control:
  - Selects Optimal Communication Rate Automatically
- Transmission Services:
  - Internetwork Unicast & Broadcast.
  - Intranetwork Unicast & Broadcast.
- Upper Layer Channel and Packet Monitoring
- Optional Security Suite (depending on layer model)
- Maximum Payload Length – 1760 bytes

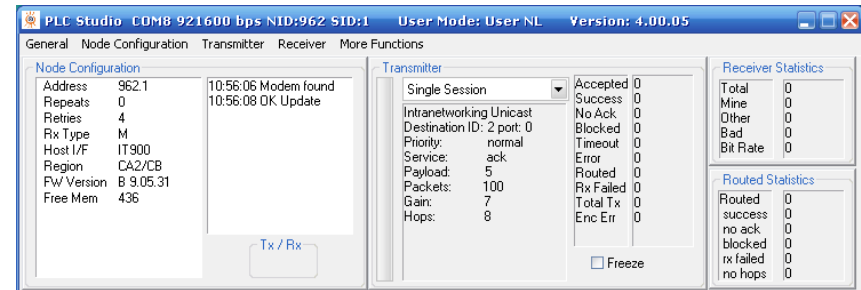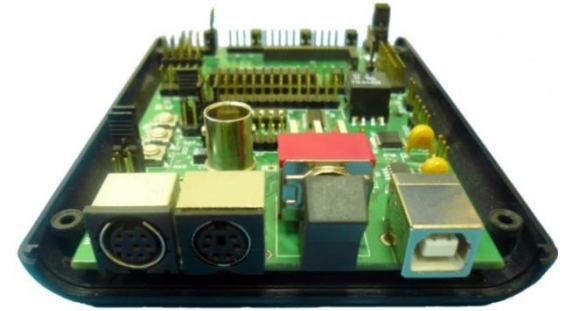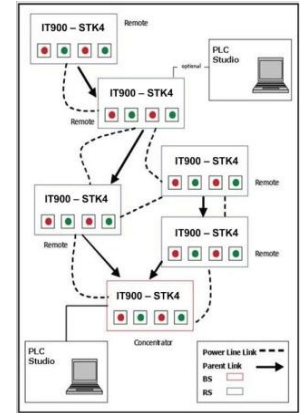| APPLICATION |
| :---: |
| PRESENTATION |
| SESSION |
| TRANSPORT |
| NETWORK |
| DLL |
| PHYSICAL |

Network Layer Basics

- Plug & Play Network Setup

- Selective and Secure Participation of Nodes

- Automatic Logical Network Creation

- Automatic Node Address Allocation

- Supports Multiple Networks

- Supports Mesh and Tree Topologies

- Master-Slave and Peer-to-Peer Network Configurations

- Automatic and Adaptive Routing Service

- Failure Detection

Development Tools

- YNET Evaluation & Development Kit

  - Allows seamless evaluation of PLC technology

  - Supports a variety of evaluation options

  - Available for FCC, CENELEC-A&B and ARIB bands

  - Full documentation package

  - Easy to use (5 minutes setup)

  - Provides enhanced platform for product development and verification

- PLC Studio PC application

- Application Code Reference

- Application HW Reference

Availability

1. IT900A ICs are available **today** !

2. IT900A PIMs are available **today** !

3. STK available for evaluation and development.

Summary

- DCSK-Turbo Advantages:
  - Designed for PLC media.
  - Proven **best** performance for PLC.
  - Complies with world wide regulations.

- Narrow Band Advantages:
  - **Low** cost.
  - **Best** solution for low cost, low power and high performance.

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