

# PLC IC

## FM320x Serial

### FM320x Series Features

- Operating voltage range:: 4.5~5.5V
- Operating Current : 15mA
- Temperature range: -40℃~+85℃ Ø Static power: 0.2W, dynamic power increase 0.3W
- UART communication rate : 1200/2400/4800 bps Adaptive Ø SSOP24/QFN48 Package

### On-chip source

- 32bit RISC MCU Core
- 320Kbytes FLASH ROM
- 16Kbytes RAM
- Three independent hardware UARTs, supports infrared modulation output
- One I2C interface
- One SPI interface
- Six input capture function
- Six output compare function
- One 12-bits ADC with max 3.2Msps
- One 12-bits DAC with max 3.2Msps
- Individual signal processing coprocessor DSP
- On-chip DC-DC Switching Power Supply
- On-chip low-power LDO
- On-chip low frequency RC oscillator
- Low-voltage alarm function

### Feature:

- OFDM modulation with 12 sub-carriers;
- Strong Interference ability by direct sequence spread spectrum with maximum spread code length up to 127;
- Special encoding to gain minimum communication speed of 600bps;
- Zero-crossing communication to avoid big noise and heavy load periods, and no Interphase interference

### Application Area

- Smart Meter Reading
- Street lamp control
- Intelligent building

	Operating Voltage	Operating Temperature	Modulation & Demodulation	ROM	RAM	Uarts	SPI	I2C

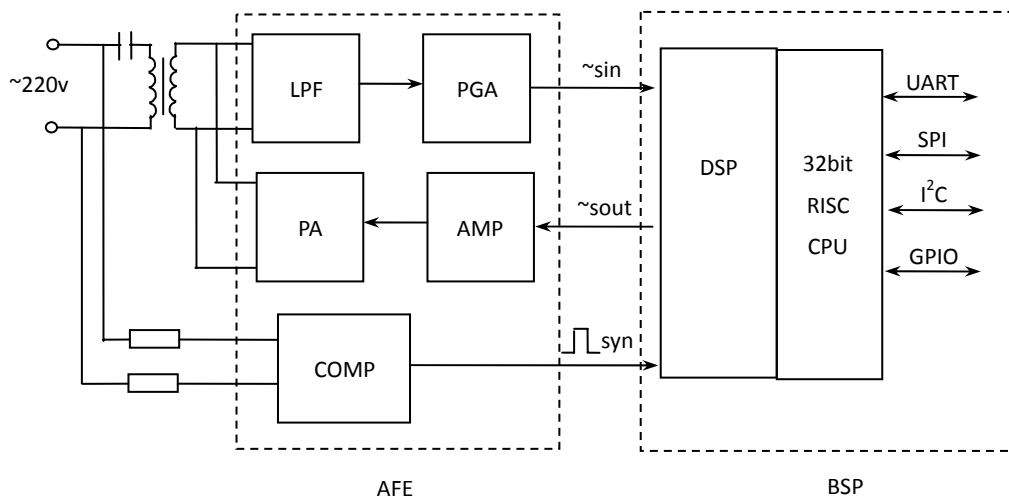
<b>FM320x</b>	4.5V ~ 5.5V	-40℃~85℃	OFDM+DSSS	320K	16K	3	1	1
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## Introduction

FM320x Serial PLC IC is an enhanced hardware and protocol solution for complex low voltage distribution network communication, from Hardware Layer, Physical Layer, Media Access Control , to Link Layer and Networking Layer, and especially suitable for PLC environment with complex topology, high noise, strong attenuation and nonlinear time-varying transfer characteristic.

## Hardware

FM320x Serial PLC IC's hardware is composed with an Analog Frontend (AFE) IC and a Baseband Signal Processor (BSP) IC.



hardware

The AFE IC is responsible for analog signal transceiver, which is composed with:

- a receiver filter;
- a Programmable-Gain Amplifier;
- a transmit signal Amplifier;
- a transmit signal Power Amplifier;
- a power frequency signal comparator;

## Physical Layer Protocol

- 20KHz~400KHz signal band;
- OFDM modulation;
- Direct Sequence Spread Spectrum;
- Zero-Cross Transmitting;
- 12 available channel;

## MAC Protocol

- Based on FDMA, TDMA & CDMA;
- Auto frame grouping with FEC;
- Point to point communication base on linkage;
- Multi-level address, including sequence number, phase address, dynamic link number and self-defined application address;

#### **Link Layer Protocol**

- Point to point communication base on virtual linkage;
- Linkage setup, data exchange and linkage delete;
- Data Verification and error retransmission based on linkage;

#### **Network Layer Protocol**

- Fully automatic network construction, without manual intervention;
- Intelligent distribution of channel, power and speed;
- Dynamic routing strategy based on quantized SNR, history record and time interval;
- Every node can be a repeater unit, avoid special repeater unit;
- Automatic discover new nodes;