

# ICON240V

# RF Specification

Rev V1

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## 1. Introduction

The following document describes the technical specification of the ICON electricity meter transceiver (called ICON240V) for the USA market.

The ICON meter is single phase class 2.0 ANSI C12.20 Electricity meter. The meter includes an AMR integrated module (call LC-TM) for RF communication.

The ICON240C includes the following modules:

- Sensor board – measure the power consumption (KWh). The sensor board can be 240 volt type or 120 volt type, both 60 HZ frequency.
- Display board – display the reading with 9 digits LCD.
- LC-TM board for RF communication

The LC-TM transmits the electricity meter readings via RF to a collecting unit. In addition specific parameters can be programmed via the RF link.

The LC-TM operates at the 900MHz ISM band. The board consists of the following units: RF Transmitter & Receiver and a Microcontroller (plus simple Digital Logic), which control the operational modes of the unit.

*Note: The RF of the LC-TM board is entirely identical (same layout, dimensions, functionality & performance) to another board called LC-TMW (FCC-ID: NTAXMETER10).*

The Display board consists of the LCD display and the internal antenna (see paragraph 3.3)

### 1.1. Definitions, Abbreviation and Acronyms

AMR	:	Automatic Meter Reading
LC-TM	:	Low Cost TransMeter

## 2. ICON240V Description

### 2.1. Block Diagram

A block diagram of the ICON240V is described below.

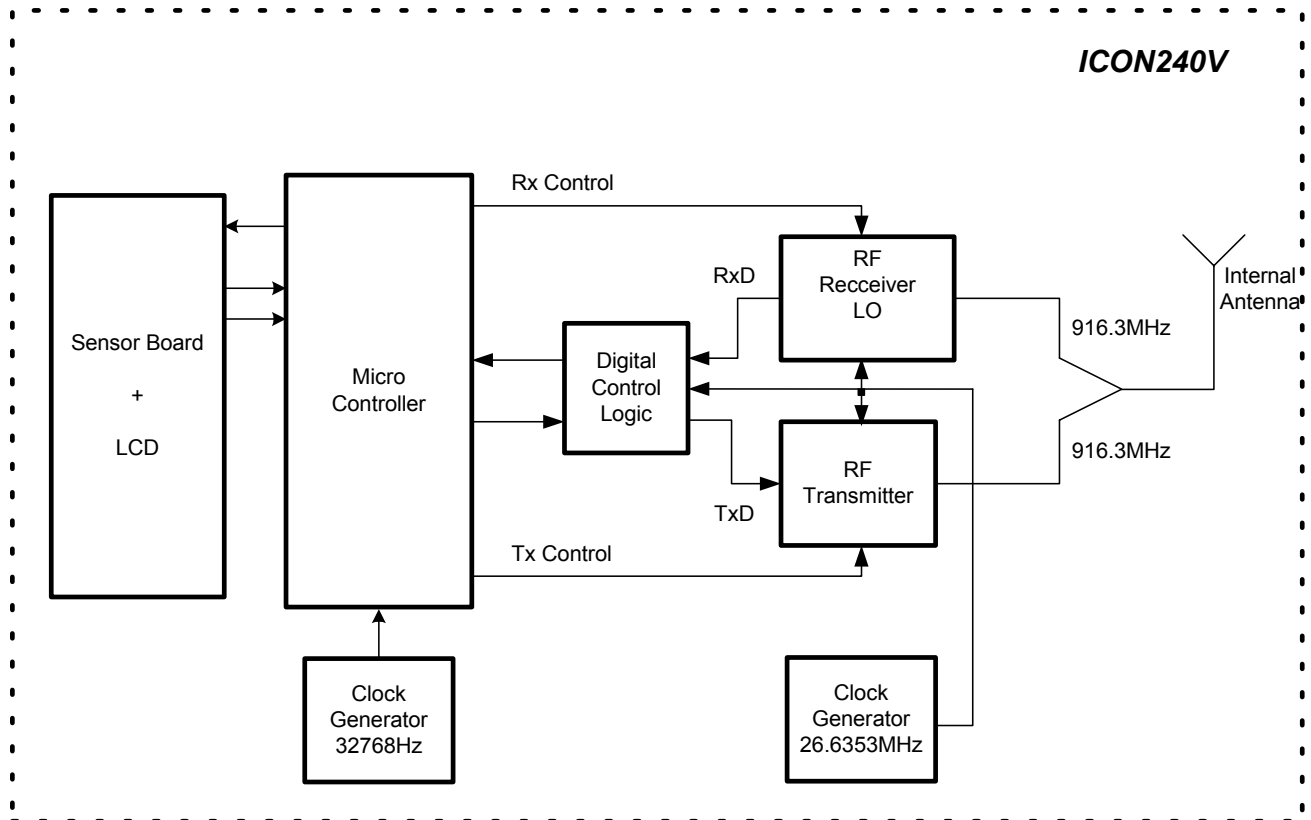


Figure 1: ICON240V Block Diagram

### 3. Electrical Performance

#### 3.1. Transmit Unit

##### 3.1.1. Transmit Parameters

FSK Transmit Parameters	
Parameter	Value
Transmit Frequency	916.3 MHz
Modulation	Digital Modulation – Wide Band BFSK
Modulation Coding	Manchester
Bit rate	59.45 kbps
Frequency deviation	~175kHz
Bandwidth (@6dB)	500kHz – 700kHz
Frequency stability (including initial stability, temperature and aging)	<50 ppm
Peak Output power (without Antenna)	< 9.8dBm
Peak Output power spectral density (without Antenna) in any 3kHz	< 8dBm
Harmonics	< - 54dBm
Tx Pulse duration	~4ms
Transmission duty cycle	Programmable. Less than 0.12%

### 3.2. *Receive Unit*

#### 3.2.1. *Receive Parameters*

<b>Receive Parameters</b>	
<b>Parameter</b>	<b>Value</b>
Receive frequency	916.3 MHz
Sensitivity (BER 1E-3)	-90 dBm
Modulation	FSK
Frequency deviation	~175 kHz
Bit rate	~20 kbps
Coding	Manchester

### **3.3. Antenna**

The ICON240V has an integral Antenna

The Antenna type is PCB FPIFA – Printed Circuit Board Folded Planar Inverted "F" Antenna.

The Antenna is Omni Directional in horizontal plane. The maximum gain is 4 dBi.

### **3.4. Environmental Conditions**

Operating Temperature: -40° C to + 85° C

Storage Temperature: -40° C to +85° C

Humidity: Up to 95%