The MLX73290-A combines a highly integrated Radio Frequency transceiver for long range, high speed communication and a 3 dimensional low frequency interface (3DLF) for low power wake-up. This unique combination makes the MLX73290-A suitable for applications requiring a very low power wake-up function together with long range, high speed RF feedback.

The transceiver part allows for multi-channel operation including frequency hopping in the European bands (433MHz and 868MHz) as well as in North America or Asia bands (315MHz or 915MHz). The output power, frequency channel, modulation type and frequency deviation are programmable. Thanks to the high frequency resolution and superior phase noise performance of its fractional-N PLL, the MLX73290-A is fit for narrow-band operation. There are two selectable modulation schemes: binary on-off keying (OOK) and binary frequency shift keying (FSK) as well as their Gaussian filtered versions. The low-IF receiver part comprises fully digital demodulation and self-polling features together with channel scanning and built-in packet recognition.

The 3DLF interface features an automatic and programmable wake-up algorithm together with an integrated data decoder to receive the payload. Monitoring independently the RSSI information from the 3-axis LF front-ends allows precise monitoring of the received LF field. Thanks to its internal rectifier, power management and load modulator, the MLX73290-A is capable of battery-less LF RFID tag operation.

### General Features

- **Wide frequency band coverage:**
  - 299 – 960MHz
- **Fast fractional-N PLL with:**
  - 61Hz resolution
- **Modulation Techniques:**
  - FSK/GFSK/OOK/GOOK/MSK/GMSK
- **Programmable data rate:**
  - 0.15 – 250kbps (FSK)
- **Programmable channel filter BW:**
  - 9 to 600kHz
- **Receiver sensitivity @ 15kHz BW, 2.4kbps:**
  - -116dBm @ 868MHz (FSK)
  - -120dBm @ 433MHz (FSK)
- **Programmable output power:**
  - -20dBm to 13dBm @ 868MHz
- **Low Power Consumption:**
  - 200nA Sleep current (RCO off)
  - 400nA Sleep current (RCO on)
- **Receiver Peak Current:**
  - 18mA @ 868MHz, 100kbps
  - 17mA @ 433MHz, 100kbps
- **Transmitter Current:**
  - 36mA @ 868MHz, +10dBm, 100kbps
- **10 bit general purpose ADC**
- **Also for external applications**
- **4 Programmable GPIO ports**
- **Tree on-chip receiver for RF wake-up:**
  - 125kHz
- **3DLF Interface for low power wake-up:**
  - 4µA in LF detection mode
- **RF/LF intelligent self-polling modes for low-power operations:**
  - Up to 38 hours possible
- **RSSI information for RX and LF interfaces:**
  - RF: 7bit 1.5dB per step / 90dB dynamic range
  - LF: 20dBm to 13dBm @ 868MHz
- **RF/LF intelligent self-polling modes for low-power operations:**
  - 700µVpp
- **LF Header detector:**
  - 32bits programmable
- **Autonomous calibration routines:**
  - VCO, I/Q imbalance and RC oscillator
- **Flexible configuration options of the RF protocol:**
  - Freely programmable preamble pattern
  - Sync word 16-, 24-, 32-bit
  - CRC and data whitening
- **256 Byte TX/RX FIFO buffer:**
  - Can be split 128/128 for RX/TX
- **Transparent data reception:**
  - Without packet handling
- **SPI-Bus Interface**
- **Automotive-quality graded:**
  - -40 to 105°C
- **Wide Supply Voltage Range:**
  - 2.1 V – 3.6 V Battery Voltage
- **32 lead DQN 5x5 package**

**MLX73290-A with 3DLF Interface**

**Product Information**

**Melexis**

**Innovative Engineering**

**MLX73290-A**

299 to 960MHz Multi-Channel RF Transceiver with 125kHz 3DLF Low Power Interface

**DACOM West**

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**Applications**

- Passive Keyless Entry (PKE)
- Passive Start Systems
- Container-Tracking-Systems
- Secure door entry Systems
- Alarm and Security Systems

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**EVB73290-A_3DLF**

- Board size: 31 x 38mm²
- SMA Antenna Connector
- 125kHz 3DLF Antenna
- Ceramic Antenna 868MHz

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**Typical Application Circuit with 3DLF Ports**

- 3D LF Antenna 126kHz
- 125kHz 3DLF Antenna
- 868MHz Ceramic Antenna

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