



## Kinetis MCU Enablement Solutions

# NXP Touch Software Library

### OVERVIEW

The NXP Touch software library is designed to speed development of your touch applications and is ideal for use with Kinetis KE15Z MCUs. Available as a source code, this software download features touch detection algorithms and is ideally suited for RTOS based applications. NXP Touch software employs a modular architecture with a variety of touch centric controls, modules, and electrode data objects, enabling integrated and customizable features.

NXP Touch software is based on a layered architecture with data types resembling an object-oriented approach and uses plain C language to configure electrodes, modules and controls. The library code is well suited for use in RTOS-based multi-tasking applications and in C++ object-oriented applications.

The touch sensing algorithms contained in the library use a dedicated touch sensing interface (TSI) module available on the Kinetis KE15Z MCU to detect finger touch, movement or gestures.

### TARGET APPLICATIONS

- ▶ Home and Building Control: Smart lighting and thermostat control
- ▶ Consumer: Refrigerators, televisions, mobile phones, PC peripherals, portable media players, small appliances, multimedia internet devices, dish washers and room air conditioning systems
- ▶ Industrial: Audio applications, fire and security systems, and industrial equipment
- ▶ Medical: Glucose meters and defibrillators

### FEATURES

- ▶ Available as source code
- ▶ Based on the MCUXpresso software development kit (SDK) for Kinetis MCUs
- ▶ Ideally suited for RTOS based applications
- ▶ Fully supports NXP new touch sensing interface (new TSI) peripheral available on Kinetis KE15Z MCUs
- ▶ Abstracted decoder controls, such as rotary, slider, keypad, analog rotary and analog slider
- ▶ Proximity and shielding electrodes
- ▶ Advanced filtering and integrating detection (AFID), signal adaptive filtering algorithm (SAFA) or “uni-directional” version of the SAFA key detectors
- ▶ Liquid tolerance
- ▶ Sensitivity auto-tuning function - automatic TSI registers configuration



## KEY BUILDING BLOCKS

The NXP Touch software library is based on a layered architecture with data types resembling an object-oriented approach and is implemented in a plain C language.

By using the NXP Touch software library, you can specify what modules and controls will be instantiated in the system and what electrodes will be serviced by each module.

## HARDWARE TOUCH SENSING INPUT SUPPORT

The NXP Touch software library fully supports the new touch sensing interface (TSI) module available on the Kinetis KE15Z MCU. The TSI module provides capacitive touch sensing detection with high sensitivity and enhanced robustness. Each TSI pin implements the capacitive measurement of an electrode having individual programmable detection thresholds and result registers. The TSI module can be functional in several low-power modes with ultra-low current adder and waking up the CPU in a touch event. It provides a solid capacitive measurement module for implementation of a touch keypad, rotaries, and sliders.

## DEVELOPMENT AND EVALUATION TOOLS

The NXP Touch software library can be used with the following toolchains: MCUXpresso IDE, IAR Embedded Workbench, Keil µVision or Kinetis Design Studio IDE. The FreeMASTER tool is supported for visualization and debugging. NXP Touch software library can be downloaded online from MCUXpresso SDK builder, and the source code of the library is located in the middleware folder of FRDM-KE15Z SDK package.

## NXP TOUCH SOFTWARE BLOCK DIAGRAM

