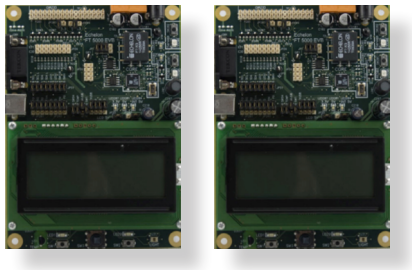
ECHELON

IzoT™ FT 6000 EVK

Evaluation and Development Kit for LONWORKS® and IzoT Platforms



FT 6000 EVK Key Features

- Supports the development of LONWORKS, LONWORKS /IP or BACnet/IP devices on a common platform
- Includes two FT 6000 EVB hardware platforms for initial application development and testing
- Includes sample I/O hardware with a 4x20 character LCD display for easy I/O prototyping and testing.
- Includes the IzoT NodeBuilder software for application development and IzoT Commissioning Tool EVK Edition for easy installation and testing of control networks
- Includes one IzoT Router with FT and Ethernet interfaces and a set of five FT 6050 Smart Transceiver chips
- Open source Wireshark network protocol analyzer can be used to capture, analyze, characterize, and display network packets so you can pinpoint network or device faults and identify potential solutions.

The FT 6000 EVK is a complete hardware and software platform for creating or evaluating LONWORKS and IzoT devices based on the Series 6000 Smart Transceivers and Neuron® Processors.

You can use the FT 6000 EVK to create devices such as VAV controllers, thermostats, card-access readers, lighting ballasts, motor controls and many other devices. These devices can be used in a variety of systems including building and lighting controls, factory automation, energy management, and transportation systems. Whether you're building large or small control network devices, IP enabled LONWORKS or BACnet devices, the FT 6000 EVK makes your project development faster, easier, and more affordable.

Development Kit for the IzoT Control Platform

Creating control devices and networking them has a unique set of challenges that are quite different from traditional data or computer networking and also quite different from the consumer Internet of Things (IoT). Most high value assets such as electro-mechanical systems within buildings, machines on factory floors, public transportation, infrastructure for the delivery of public utilities and many others, require controlling and monitoring by special devices that are attached at key control and monitoring points and these devices together from the Industrial Internet of Things (IIoT). The control and communication of these devices requires:

- autonomous control — without the need for human involvement
- industrial strength reliability
- co-existence with legacy control protocols and evolution to new IP based addressing
- hardened security

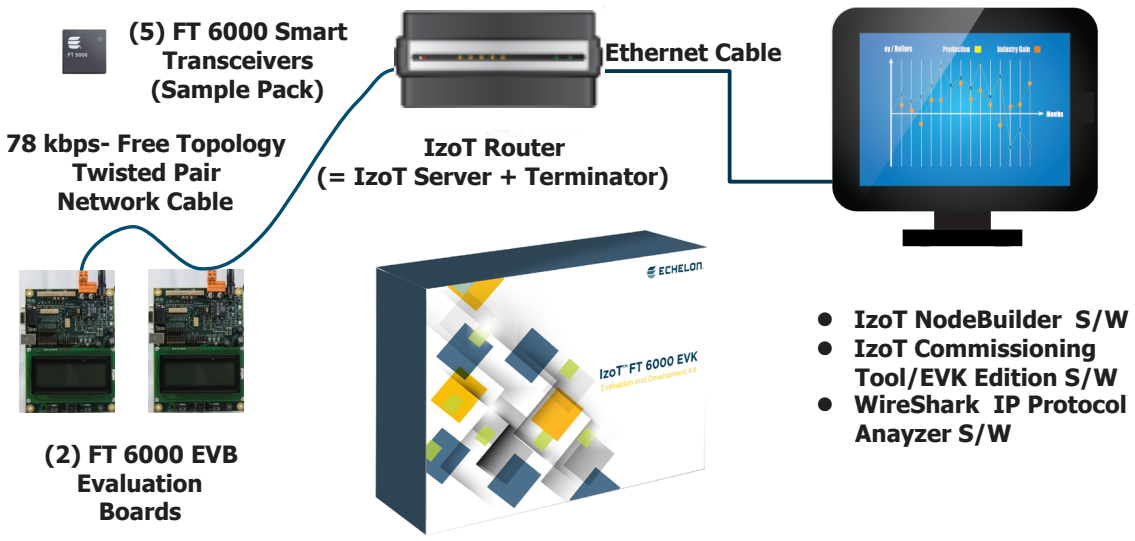
The FT 6000 EVK is the easiest way for developers to create control devices and connect them with control networks. The FT 6000 EVK facilitates:

- creation of autonomous communities of devices
- the ability discover each other
- a rich set of standard and inter-operable device profiles
- creation of meaningful and functional bindings between devices
- secure group messaging between devices
- IP addressing down to the device level
- an easy to use programming environment

IzoT NodeBuilder Software

The IzoT NodeBuilder software lets you create, debug, test, and maintain applications for LONWORKS or IzoT devices based on an Echelon Series 6000 Neuron Processor or Smart Transceiver. Using the

“IzoT Platform-in-a-box”: The FT 6000 EVK



IzoT NodeBuilder software, you write your device applications using the Neuron C programming language, a high-level language based on ANSI C with extensions to simplify network communication, hardware I/O, and event-driven processing. The Neuron C language supports up to 254 address table entries, 254 static network variables and 127 network variable aliases per device for devices based on a Series 6000 chip with Neuron Firmware version 21 or newer, subject to available memory.

The IzoT NodeBuilder software supports application-specific interrupt handlers and a hardware semaphore that can be used for interrupt task synchronization. Interrupt sources include signals on any of the 12 I/O pins (rising edge, falling edge, either edge, positive or negative level), the high-performance on-chip timer and counter units, and a dedicated, configurable, high-performance periodic system timer.

The IzoT NodeBuilder software includes the following tools:

IzoT NodeBuilder Resource Editor. View standard types and functional profiles, and create user-defined types and profiles if the standard resource files don’t include the resources you need.

IzoT NodeBuilder Code Wizard. Use a drag-and-drop interface to create your device’s interface, and then automatically generate Neuron C source code that implements the device interface and creates the framework for your device application. The code wizard saves days of development for every new device.

IzoT NodeBuilder Editor. Edit the Neuron C source code generated by the code wizard to create your device’s application.

IzoT NodeBuilder Debugger. Debug your application with a source-level view of your application code as it executes.

IzoT NodeBuilder Project Manager. Build and download your application image to your development platform or to your own device hardware.

ISI Developer’s Kit. Develop ISI devices that use the Interoperable Self-Installation (ISI) protocol to install and organize themselves into networks automatically or at the push of a button, all without the use of a separate installation tool.

IzoT Commission Tool EVK Edition

An integral part of the IzoT NodeBuilder software, the IzoT Commissioning tool is a software package for designing, installing, and maintaining LONWORKS and IzoT control networks. This single tool manages all phases of a network’s life cycle, from the initial design and commissioning to the ongoing operation. Based on Echelon’s IzoT Network Services Server, the IzoT Commissioning tool combines a powerful client-server architecture with an easy- to-use Microsoft Visio user interface. It is compatible with a number of IzoT and LNS® plug-ins, including the IzoT NodeBuilder Project Manager.

FT 6000 Evaluation Board (EVB)

Two FT 6000 EVB Evaluation Boards are included with the FT 6000 EVK. The FT 6000 EVB is a complete Series 6000 LONWORKS and IzoT device that you can use to evaluate and create LONWORKS and IzoT devices. The FT 6000 EVB includes an FT 6000 Smart Transceiver with an external 10MHz crystal (you can adjust the internal system clock speed from 5MHz to 80MHz), an FT-X3 communication transformer, 512KB external serial flash memory device, and a 3.3V power source.

FT 6000 EVB Evaluation Board

The FT 6000 EVB's compact design includes the following I/O devices, which you can use to develop prototype and production devices, and to test the FT 6000 EVB example applications:

- 4-line x 20-character LCD display
- 4-way joystick with center push button
- Two push-button inputs
- Two LED outputs
- Light-level sensor
- Temperature sensor

An FT 6000 EVB I/O library, included with the IzoT NodeBuilder software, provides easy-to-use high-level functions for accessing the display, light-level sensor, and temperature sensor.

The FT 6000 EVB Evaluation Board also includes an EIA-232/TIA-232/RS-232 interface and a USB interface that you can use to connect the board to your development computer and perform application-level debugging (only one of the two serial interfaces can be used at a time).

Each FT 6000 EVB also features a connector for optional in-circuit programming of the external non-volatile memory of the FT 6000 Smart Transceiver on the board. This allows fast application downloads to the external non-volatile memory.

IzoT Router with FT and Ethernet Interfaces

One IzoT router is included with the FT 6000 EVK. The IzoT router includes the IzoT ServerStack and the FT terminators. The IzoT router supports FT and Ethernet interfaces and can be used to connect the FT 6000 EVBs to a host that is running the IzoT NodeBuilder software and the IzoT Commissioning Tool.

Specifications

Operating System

Microsoft Windows 8 64-bit and 32-bit or Windows 7 64-bit and 32-bit or Windows XP 32-bit.

Minimum Hardware

Intel Pentium® III 1.3GHz processor; 2GB RAM for Windows Vista, 512MB RAM for Windows XP; CD-ROM drive; mouse or other Windows-compatible pointing device; 300 to 550 MB free hard-disk space.

Neuron C I/O Objects

Bit, byte, nibble input/output

Bitshift input/output

Dallas Touch input/output

Dual slope input
(for low-cost A/D)

Edge divide output

Edgelog input

Frequency output

Infrared input

Infrared pattern output

I2C input/output

Level detect input

Magcard bitstream input

Magcard track 1 and 2 input
(for ISO 7811 input)

Muxbus input/output
(multiplexed address/data)

Neurowire input/output
(National Semiconductor Microwire and Motorola SPI compatible)

Oneshot output, ontime input, period input, pulsewidth output

Parallel input/output

Pulsecount input/output

Quadrature input

SCI (UART) serial input/output*.

SPI serial input/output*.

Serial input/output.

Total count input.

Touch input/output
(Maxim/Dallas 1-Wire® protocol-compatible)

Triac and stretched triac** output

Triggeredcount output

Wiegand input

Neuron C Network

Communication Extensions

Functional blocks

Network variables

Configuration properties

Application and foreign-frame messages

FT 6000 EVB

Processor

FT 6000 Smart Transceiver.

Processor Input Clock

10MHz (5MHz to 80MHz system clock).

Processor Memory

64KB on-chip RAM, 16KB on-chip ROM, 512KB external serial flash memory, mapped to 64KB Neuron memory space based on IzoT NodeBuilder hardware template definition.

Operating Input Voltage

+9 to 12VDC unregulated.

External I/O Power

Combined +5V and +3.3V current not to exceed 100mA.

External Power Supply

100 to 240VAC; 50 or 60Hz.

Operating Temperature

0 to +45°C

Non-operating Temperature

-20 to +70°C

Dimensions

140mm x 105mm x 30mm

EMC Compliance

EN 55022 Class A.

Documentation

Series 6000 EVK User's Guide

078-0503-01A

Describes how to use the FT 6000 EVK Evaluation and Development Kit to develop control applications and networks using the IzoT platform.

FT 6000 EVB Hardware Guide 078-0504-01A

Describes how to connect the FT 6000 EVB boards, and it describes the Neuron core, I/O devices, service pin, reset buttons, LEDs, and jumper settings on the FT 6000 EVB hardware.

FT 6000 Examples Guide

078-0505-01A

Describes how to run the example applications included with the Evaluation Kit on an FT 6000 EVB.

Series 6000 Chip Data Book

005-0230-01A

Provides detailed specifications on the electrical interfaces, mechanical interfaces, and operating environment characteristics for the FT 6000 Smart Transceiver and Neuron 6000 Processor.

IzoT Router Quick Start Guide

078-0506-01A

A quick guide for connecting the Izot Router.

IzoT BACnet Developer's Guide

078-0507-01

Describes how to use the BACNet library and run the BACnet examples for the 6000 EVK.

IzoT Resource Editor's Guide
078-0508-01A

Describes resource files and how to use the IzoT Resource Editor to view, create, and modify them.

IzoT Commissioning Tool User's Guide

078-0509-01A

Describes how to use the this tool to design, install, operate, and maintain IzoT networks.

IzoT Network XML Programmer's Guide

078-0510-01A

This guide describes how to create and modify an IzoT network using the XML Plug-in.

IzoT Plug-in Guide for WireShark

078-0511-01A

How to plug into the WireShark packet analyzer to monitor, analyze, and troubleshoot network protocol problems.

I/O Model Reference for Smart Transceivers and Neuron Chips

078-0392-01C

Describes the many different I/O models that are available for use with Smart Transceivers and Neuron Chips. An I/O model provides programmable access to one or more I/O pins.

Neuron Assembly Language Reference Guide

078-0399-01B

Describes the Neuron Assembly Language and how to write assembly language functions.

Neuron C Programmer's Guide

078-0002-02I

Describes how to write programs using the Neuron C programming language.

Neuron C Reference Guide

078-0140-02G

Provides reference info for writing programs using the Neuron C programming language.

Neuron Tools Errors Guide

078-0402-01D

Documents and explains the various warning and error messages that can occur in the Echelon development tools.

Ordering Information

IzoT FT 6000 EVK: Evaluation and Development Kit
10070R-43-54

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