

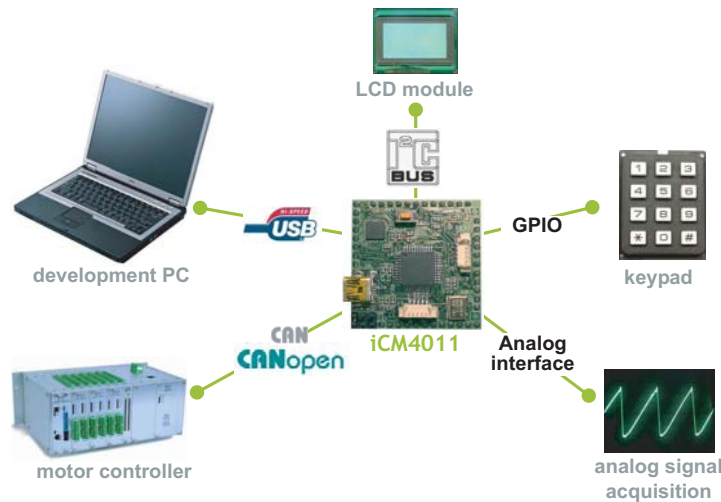
# ingenia Communication Module **development kit**

OEM development KIT for dsPIC30F family

## Overview

Nowadays one of the most critical issues in project development is the first prototyping of the product. During this phase, devices of different manufacturers have to be evaluated and rated in comparison with others in order to provide an accurate vision of the alternatives and make the correct choice. Each device may have different interfaces.

The main purpose of this development kit is to give rapid capability to prototype any kind of industrial applications with low to medium processing needs (up to 30MIPS). To that end, the development board is based on a last generation digital signal processor (dsPIC30F4011) and incorporates transceivers for the most common communication standards (USB, RS232, RS485, and CAN).



### Typical applications:

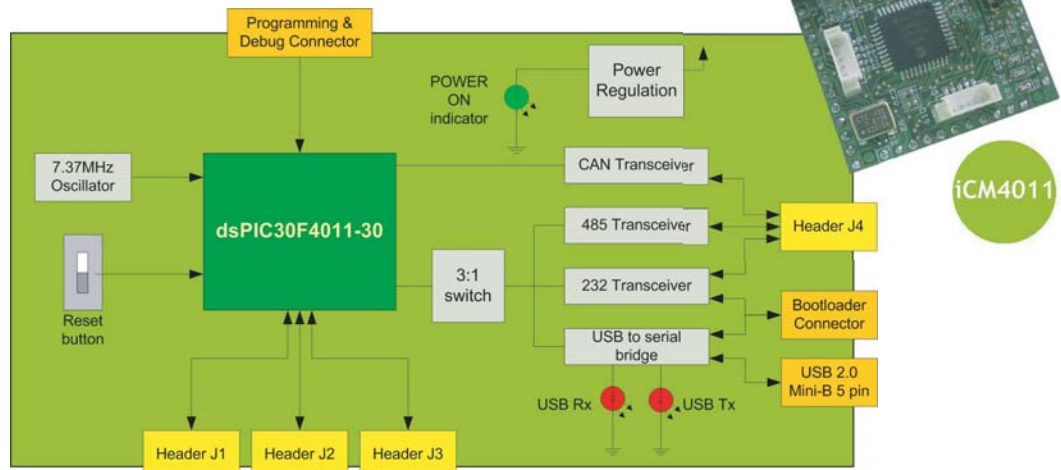
- Sensor conditioning and multiplexing
- Motor control
- Human interface (keyboard reader, LCD driver,...)
- Data processing (FIR, IIR, data acquisition,...)
- Bridges: USB-SPI, USB-I2C, RS485-I2C,...

The processor is preprogrammed in factory with firmware developed by ingenia (bootloader) that allows for reprogramming of the device. In this way a program can be loaded through an RS232 or USB port in a few seconds and without the need of an external programmer

iCM4011 also incorporates a programming/debugging connector ICSP®, for firmware developers that require debugging by means of external tools (such as ICD2® or other compatible programmers).

The board can be USB powered, giving to the kit full plug&play functionality.

## Block Diagram



iCM4011



development  
kit

# Technical Specifications

iCM4011

## Electrical Data

Recommended operating range	5 -12 VDC
Max. supply voltage	16 VDC
Max. supply current	250mA
I/O Max. current (per pin)	20mA
I/O Max. current source	100mA
Temperature range	0°C to 70°C
Power supply modes	Regulated / USB (automatically switched)

## Processor Data

Processor type	RISC MCU + DSP engine (dsPIC30F4011/3011)
Program FLASH	48 Kbytes
Data RAM	2048 bytes
Data EEPROM	1024 bytes
I/O Ports	30
ADC	9 channels, 10 bits/sample
Motor control features	6 PWM channels, Quadrature enc. interface
Other features	5 timers, 4 input capture/ compare, Brown out reset
Externally available pins	All pins, except AVDD and OSC1/CLKIN

## LED indicator

Green	POWER ON
Red 1	USB Tx
Red 2	USB Rx

## Integrated Interfaces and Transceivers

SPI*	SDI; SDO; SCK; SS
I2C*	SDA; SCL
USB**	Data+; Data-
RS-485**	485A; 485B
RS-232**	RxD; TxD
CAN	CAN_H(high); CAN_L(low)

\* Only one interface active at a time, selectable via configuration jumpers

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## ingenia dsPIC bootloader package

iCM4011 development kit comes with ingenia dsPIC bootloader package which includes:

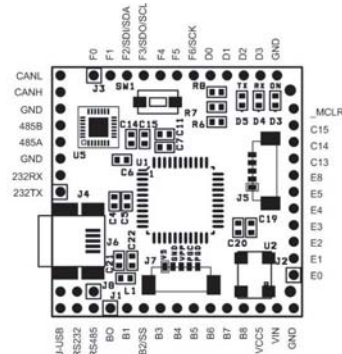
- ingenia bootloader firmware
- ingenia bootloader Graphic User Interface (Windows OS only)
- User's guide and examples

The package gives you an easy, fast and user friendly development environment.

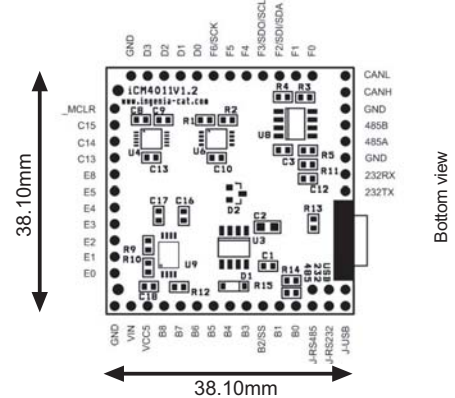
The kit also includes USB 2.0 cable and complete product documentation.



ingenia dsPIC bootloader screenshots



Top view



Bottom view

All specifications and designs are subject to change without notice or obligation

## Mechanical Specifications

Size	38.10 x 38.10 mm
Weight	30g
Connector J1(dsPIC)	12 pin, 2.54mm pitch
Connector J2(dsPIC)	11 pin, 2.54mm pitch
Connector J3(dsPIC)	12 pin, 2.54mm pitch
Connector J4(dsPIC)	8 pin, 2.54mm pitch
Connector J5 (Bootloader)	5 pin, 1.25mm pitch
Connector J6(USB)	USB-Mini-B (5pin)
Connector J7 (Program&debug)	5 pin, 1.25mm pitch

## Contact Information



10 Clever Lane  
Tewksbury, MA 01876 USA

Phone: 978.455.3383  
Toll Free: 866.455.3383  
Fax: 978.926.3091

web site: www.ultsol.com  
email: info@ultsol.com

iCM4011