



INTELLIGENT I/O  
EXPANSION CHIP



# RABBIT RIO®

The Rabbit RIO chip is an intelligent I/O processor ideally equipped for industrial automation and control

The Rabbit RIO chip offers both I/O expansion and peripheral features that easily integrate into new or existing designs. It interfaces to any microcontroller with an available SPI or parallel port. Multiple peripheral features offer a distinct advantage for motor control applications. The Rabbit RIO simply takes the load off the processor, making it ideal for applications with demanding networking requirements.

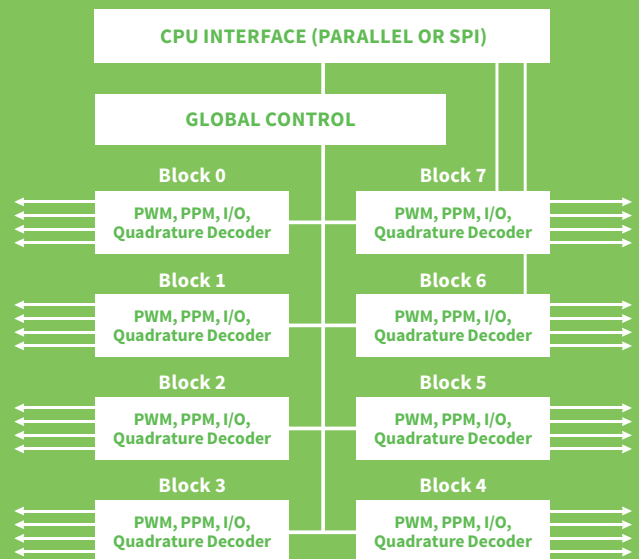
The Rabbit RIO is also ideal for machine control applications. I/Os are 5V tolerant, which also includes pin-pair protection for applications such as H-bridge drivers. Since multiple status bits are set from a single match register, pins are easily

configurable for higher drive current operations. The same signal could be output on multiple pins for applications that require a higher current. It also provides push pull protection for sink and source drivers.

## BENEFITS

- Easily interface to any CPU via an available SPI or parallel port
- Instantly add up to 32 digital I/O lines
- 8 independent functional channels with 4 ports each
- Functional channels configurable as: Bi-directional I/O, PWM or PPM outputs, TRIAC signal generators, input capture, counter, Quadrature decode peripheral
- Add I/O and peripheral features to any new or existing design
- Use multiple Rabbit RIO devices for large I/O requirements

## APPLICATION EXAMPLE



## RELATED PRODUCTS



Rabbit® SBC  
BL2100  
Series



Rabbit® SBC  
BL4S100  
Series



Rabbit® SBC  
BL4S200  
Series



RabbitCore®  
RCM3000  
Series



Dynamic C®

## SPECIFICATIONS

# Rabbit RIO® Expansion Chip

### FEATURES

|                                  |  |
|----------------------------------|--|
| <b>CLOCK SPEED</b>               | Up to 40 MHz   |
| <b>OPERATING VOLTAGE</b>         | 3.0-3.6VDC   |
| <b>MAXIMUM I/O INPUT VOLTAGE</b> | 5.0VDC (3.3VDC typ.)   |
| <b>CORE CURRENT</b>              | 22 MHz @ 31.3 mA, 25° C  |
| <b>I/O RING</b>                  | 22 MHz @ 1.1 mA, 25° C   |
| <b>OUTPUT DRIVE</b>              | 8 mA   |
| <b>CPU INTERFACES</b>            | SPI or 8-bit parallel  |
| <b>FIXED DIGITAL INPUTS</b>      | 4  |
| <b>CONFIGURABLE I/O</b>          | 8 independent channels, each with 4 ports: <ul style="list-style-type: none"> <li>• Up to 32 bi-directional I/O lines</li> <li>• Up to 32 PWM outputs</li> <li>• Up to 16 PPM outputs</li> <li>• Up to 32 TRIAC signal generators</li> <li>• Up to 8 input capture peripherals</li> <li>• Up to 8 counters</li> <li>• Up to 8 quadrature decode peripherals</li> </ul> |
| <b>PACKAGE TYPE</b>              | 64-pin TQFP 10 mm x 10 mm x 1.4 mm   |

## RIO PROGRAMMABLE I/O APPLICATION KIT

### APPLICATION KIT CONTENTS:

- RCM4110 module
- Rabbit RIO Prototyping Board
- Universal AC adapter, 12 V DC, 1 A.\*
- 10-pin header to DB9 programming cable with integrated level-matching circuitry
- Plastic and metal standoffs with 4-40 screws
- A bag of jumpers and jumper wires for use on the Prototyping Board
- Rabbit® 4000 Processor Easy Reference poster



\*Included only with Application Kits sold for the North American market. A header plug leading to bare leads is provided to allow overseas users to connect their own power supply with a DC output of 8-30 V.

## PART NUMBERS

## DESCRIPTION

|             |  |
|-------------|--|
| 101-1147    | Rabbit RIO® Programmable I/O Application Kit |
| 20-668-0030 | Rio I/O chip                                 |
| 20-101-1187 | Rio I/O chip (2 pack)                        |

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