PRODUCT MANUAL

MiniCom (OP6800)

C-Programmable Operator Interface

User's Manual

019–0106 • 070831–F

1. INTRODUCTION

The OP6800 intelligent terminal interface is a small, high-performance, C-programmable terminal interface that offers built-in I/O and Ethernet connectivity. A Rabbit® 2000 microprocessor operating at 22.1 MHz provides fast data processing.

1.1 Description

The OP6800 intelligent terminal interface incorporates the powerful Rabbit 2000 microprocessor, flash memory, static RAM, digital I/O ports, RS-232/RS-485 serial ports, and a 10Base-T Ethernet port.

1.2 Features

- 122 × 32 graphic display.
- 7-key keypad.
- 7 LEDs.
- 24 digital I/O: 13 filtered digital inputs, and 11 sinking high-current outputs (7 outputs with LED indicators, and 4 high-current digital outputs with transient protection to drive inductive loads).
- Rabbit 2000 microprocessor operating at 22.1 MHz.
- 128K static RAM and 256K flash memory standard, may be increased to 512K SRAM and 512K flash memory.
- One RJ-45 Ethernet port compliant with IEEE 802.3 standard for 10Base-T Ethernet protocol (OP6800 only).
- Four serial ports (2 RS-232 or 1 RS-232 with RTS/CTS, 1 RS-485, and 1 CMOS-compatible programming port).
- Battery-backable real-time clock, connection point for external battery included.
- Watchdog.
- Reset generator.
- Meets NEMA 4 watertightness specifications when front-panel mounted.
- Remote program downloading and debugging capability via RabbitLink.

Two OP6800 models are available. Their standard features are summarized in Table 1.

Table 1. OP6800 Models

Feature	OP6800	OP6810
Microprocessor	Rabbit 2000 running at 22.1 MHz	
Static RAM	128K	
Flash Memory	256K	
RJ-45 Ethernet Connector and Filter Capacitors	Yes	No
RabbitCore Module Used	RCM2200	RCM2300

One additional 512K flash/512K SRAM memory option is available for custom orders, and involves nominal lead times. Contact your Rabbit Semiconductor sales representative or authorized distributor for more information.

Throughout this manual, the term OP6800 refers to the complete series of OP6800 operator interfaces unless other production models are referred to specifically.

Appendix A provides detailed specifications.

Visit our Web site for up-to-date information about additional add-ons and features as they become available. The Web site also has the latest revision of this user's manual.

1.3 Development and Evaluation Tools

1.3.1 Tool Kit

A Tool Kit contains the hardware essentials you will need to use your OP6800. The items in the Tool Kit and their use are as follows.

- ***Dynamic C*** CD-ROM, with complete product documentation on disk.
- ***OP6800 Getting Started*** instructions.
- Programming cable, used to connect your PC serial port to the OP6800.
- 12 V AC adapter, used to power the OP6800. An AC adapter is supplied with tool kits sold in the North American market. If you are using your own power supply, it must provide 9 to 36 V DC.
- Demonstration Board with prototyping area, pushbutton switches, and LEDs. The Demonstration Board can be hooked up to the OP6800 to demonstrate the I/O, and the prototyping area can be used for custom circuits.
- Ribbon cable to connect Demonstration Board to OP6800.
- Screwdriver.
- ***Rabbit 2000 Processor Easy Reference*** poster.
- Registration card.

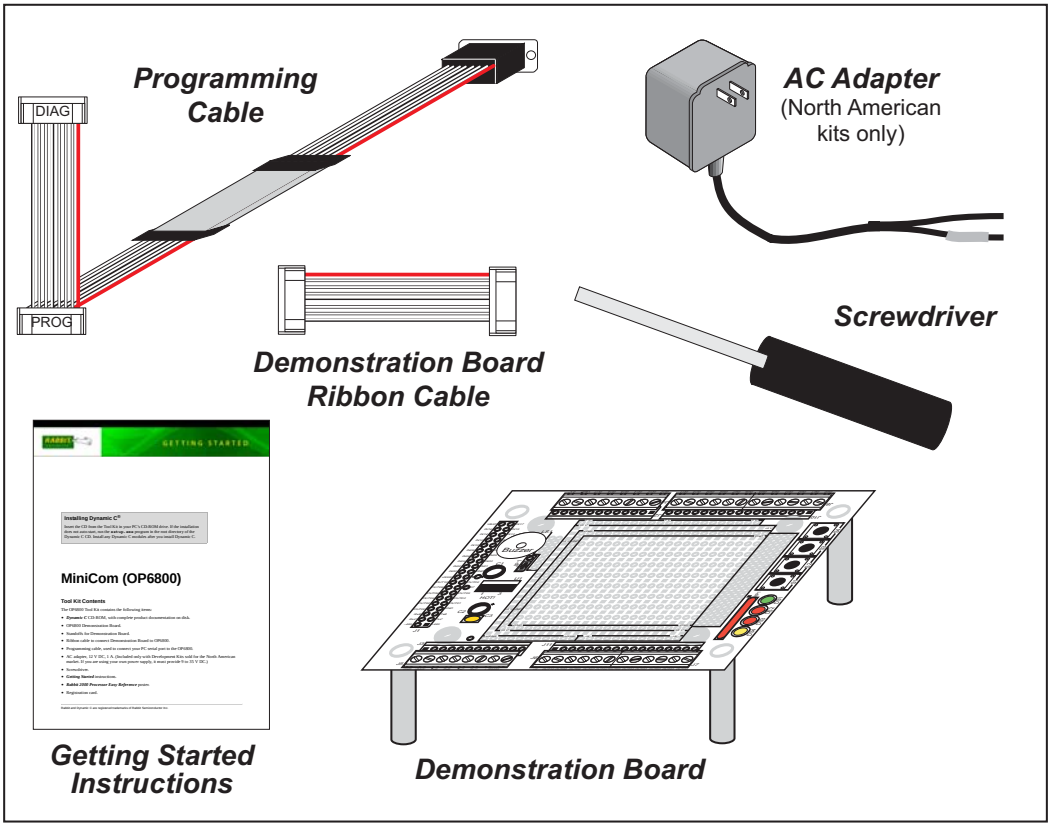

Figure 1. OP6800 Tool Kit

1.3.2 Software

The OP6800 is programmed using version 7.06 or later of Rabbit Semiconductor's Dynamic C. A compatible version is included on the Tool Kit CD-ROM. Library functions provide an easy-to-use interface for the OP6800. Software drivers for the display and keypad, TCP/IP, I/O, and serial communication are included with Dynamic C. Web-based technical support is included at no extra charge.

Rabbit Semiconductor also offers add-on Dynamic C modules containing the popular µC/OS-II real-time operating system, as well as PPP, Advanced Encryption Standard (AES), and other select libraries. In addition to the Web-based technical support included at no extra charge, a one-year telephone-based technical support module is also available for purchase. Visit our Web site at www.rabbit.com or contact your Rabbit Semiconductor sales representative or authorized distributor for further information.

1.4 CE Compliance

Equipment is generally divided into two classes.

CLASS A	CLASS B
Digital equipment meant for light industrial use	Digital equipment meant for home use
Less restrictive emissions requirement: less than 40 dB µV/m at 10 m (40 dB relative to 1 µV/m) or 300 µV/m	More restrictive emissions requirement: 30 dB µV/m at 10 m or 100 µV/m

These limits apply over the range of 30–230 MHz. The limits are 7 dB higher for frequencies above 230 MHz. Although the test range goes to 1 GHz, the emissions from Rabbit-based systems at frequencies above 300 MHz are generally well below background noise levels.

The OP6800 has been tested and was found to be in conformity with the following applicable immunity and emission standards. The OP6810 is also CE qualified as it is a sub-version of the OP6800. Boards that are CE-compliant have the CE mark.

NOTE: Earlier versions of the OP6800 sold before 2003 that do not have the CE mark are ***not*** CE-complaint.

Immunity

The OP6800 operator interfaces meet the following EN55024/1998 immunity standards.

- EN61000-4-2 (ESD)
- EN61000-4-3 (Radiated Immunity)
- EN61000-4-4 (EFT)
- EN61000-4-6 (Conducted Immunity)

Additional shielding or filtering may be required for a heavy industrial environment.

Emissions

The OP6800 operator interfaces meet the following emission standards emission standards with the Rabbit 2000 spectrum spreader turned on and set to the normal mode. The spectrum spreader is only available with Rev. C or higher of the Rabbit 2000 microprocessor. This microprocessor is used on the OP6800 operator control panels that carry the CE mark.

- EN55022:1998 Class B
- FCC Part 15 Class B

Your results may vary, depending on your application, so additional shielding or filtering may be needed to maintain the Class B emission qualification.

1.4.1 Design Guidelines

Note the following requirements for incorporating the OP6800 operator interfaces into your application to comply with CE requirements.

General

- The power supply provided with the Tool Kit is for development purposes only. It is the customer's responsibility to provide a CE-compliant power supply for the end-product application.
- When connecting the OP6800 to outdoor cables, the customer is responsible for providing CE-approved surge/lightning protection.
- Rabbit Semiconductor recommends placing digital I/O or analog cables that are 3 m or longer in a metal conduit to assist in maintaining CE compliance and to conform to good cable design practices. Rabbit Semiconductor also recommends using properly shielded I/O cables in noisy electromagnetic environments.
- While the OP6800 meets the EN61000-4-2 (ESD) requirements in that it can withstand contact discharges of ± 4 kV and air discharges of ± 8 kV, it is the responsibility of the end-user to use proper ESD precautions to prevent ESD damage when installing or servicing the OP6800.

Safety

- For personal safety, all inputs and outputs to and from the OP6800 must not be connected to voltages exceeding SELV levels (42.4 V AC peak, or 60 V DC). Damage to the Rabbit 2000 microprocessor may result if voltages outside the design range of 0 V to 40 V DC are applied directly to any of its digital inputs.
- The lithium backup battery circuit on the OP6800 has been designed to protect the battery from hazardous conditions such as reverse charging and excessive current flows. Do not disable the safety features of the design.

1.4.2 Interfacing the OP6800 to Other Devices

Since the OP6800 operator control panels are designed to be connected to other devices, good EMC practices should be followed to ensure compliance. CE compliance is ultimately the responsibility of the integrator. Additional information, tips, and technical assistance are available from your authorized Rabbit Semiconductor distributor, and are also available on our Web site at www.rabbit.com.