USB-16 DIO Channel Controller Users Manual

Contents

Introduction

Overview

The Black Box IC1016A provides 16 reed relays that can latch power, data or other electronic signals for control applications. The Black Box IC1016A is USB 1.1 compliant.

What's Included

The Black Box IC1016A is shipped with the following items. If any of these items is missing or damaged, contact the supplier.

- Black Box IC1016A
- Software
- USB A to B Cable

Installation

Windows 98/ME/2000/XP Installation

Do not install the Adapter in the machine until the software has been fully installed.

1. Start Windows.

2. Insert the CD in to your CD drive.

3. If 'Auto-Start' is enabled for this drive the software will automatically launch. Otherwise, point your browser to the 'Index.htm' on the root of the CD

4. Select 'Install Software'.

5. Select the part number for your adapter from the listing.

6. Select 'Windows 98/ME/2000/XP' the setup file will automatically detect the operating environment and install the proper components. Next (depending on the OS version) select the 'Run from current location' or 'Open' option. Follow the information presented on the screens that follow. During setup the user may specify installation directories and other preferred configurations. This program also adds entries to the system registry that are necessary for specifying the operating parameters for each driver. An uninstall option is also available to remove files and registry/INI file entries from the system.

Windows NT Note: Windows NT is not USB aware and thus cannot support the adapter.

Technical Description

The Black Box IC1016A provides two parallel reed relay output ports. The ports are organized as ports A, and B. The Black Box IC1016A is a line-powered device requiring a USB port capable of sourcing 500 mA.

Features

- 16 SPST relays
- Removal Terminal block connectors
- Highly reliable 10 VA DIP reed relays utilized
- Multiple adapters can be used in same computer

Reed Relays

Reed relays provide very high quality, long life, low power, dry contact switch closures. Reed relays are not suited for high current applications, or inductive loads. The relays are normally open, and close when energized.

Relay Specifications

- Contact Power Ratings: 10-Watts Maximum
- Contact Voltage Maximum: 100 Volts DC or AC Maximum
- Contact Current Maximum: .5 Amps DC or AC RMS
- Contact Resistance, Initial: .15 Ohms
- Rated Life:
  - Low Load: 200 Million Closures
  - Maximum Load: 100 Million Closures
- Contact Speed:
  - Operate: .5 mS
  - Release: .5 mS
  - Bounce: .5 mS
- Maximum Operating Speed: 600 Hertz

Application Programmers Interface (API)

Most modern operating systems do not allow direct hardware access. The driver and API have been included to provide control over the hardware in Windows. The purpose of this section of the manual is to help the customer with the mapping of the API to the actual I/O and relays for the Black Box IC1016A specifically. Complete documentation of the API can be found in the help file.

Serial String

Each device has an eight digit alphanumeric serial string stored in non-volatile memory. On the Windows platforms, this number is used to give each unit a separate identity. This identity allows the device to be moved to any USB port or hub port on your computer while retaining its device number. If a device becomes damaged and is replaced the new device should be given the same serial string as the device it is replacing. This string is stored in a EEPROM along with other critical information. This EEPROM is read during enumeration. The device should not be unplugged during its enumeration due to remote possibility that the data in the EEPROM could be corrupted if power is removed during a read/write cycle to the EEPROM. Enumerator is complete when the LED is lit.

The control panel utility provides the capability to read or modify this string. However, **setting the same string for two units will cause the second unit to fail enumeration, and make it invisible to the operating system.** Should this occur, unplug one unit and set the serial string for the other unit to a different value.
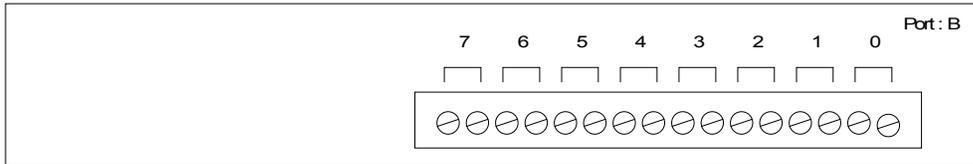
Pin Assignments (Removable Terminal Block)

Port A Bit	Port A Terminals
0	0,1
1	2,3
2	4,5
3	6,7
4	8,9
5	10,11
6	12,13
7	14,15

Port B Bit	Port B Terminals
0	0,1
1	2,3
2	4,5
3	6,7
4	8,9
5	10,11
6	12,13
7	14,15

Side Panel View Port A
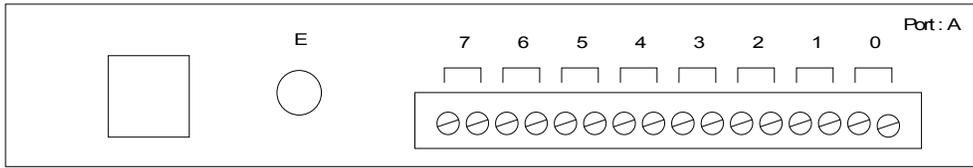
Side Panel View Port B

3rd Party Software Support

Third party software support for many HMI/MMI and other process control software is included on the product installation CD.

Specifications

Specification	Operating	Storage
Temperature Range	0º to 70º C (32º to 158º F)	-50º to 105º C (-58º to 221º F)
Humidity Range	10 to 90% R.H. Non-Condensing	10 to 90% R.H. Non-Condensing

Manufacturing

The Printed Circuit boards in IC1016A are built to UL 94V0 rating and are 100% electrically tested. These printed circuit boards are solder mask over bare copper or solder mask over tin nickel.

Power Consumption

|	
Supply line	+5 VDC
Rating	500 mA

Appendix A - Troubleshooting

Following these simple steps can eliminate most common problems.

Install software **first**. After installing the software then proceed to adding the hardware. This places the required installation files in the correct locations.

1. Read this manual thoroughly before attempting to install the adapter in your system.

2. Use Device Manager under Windows to verify proper installation.

3. Use the control panel applet for card identification and configuration.

4. If these steps do not solve your problem, please call Black Box Technical Support.

Appendix B - Silk-Screen
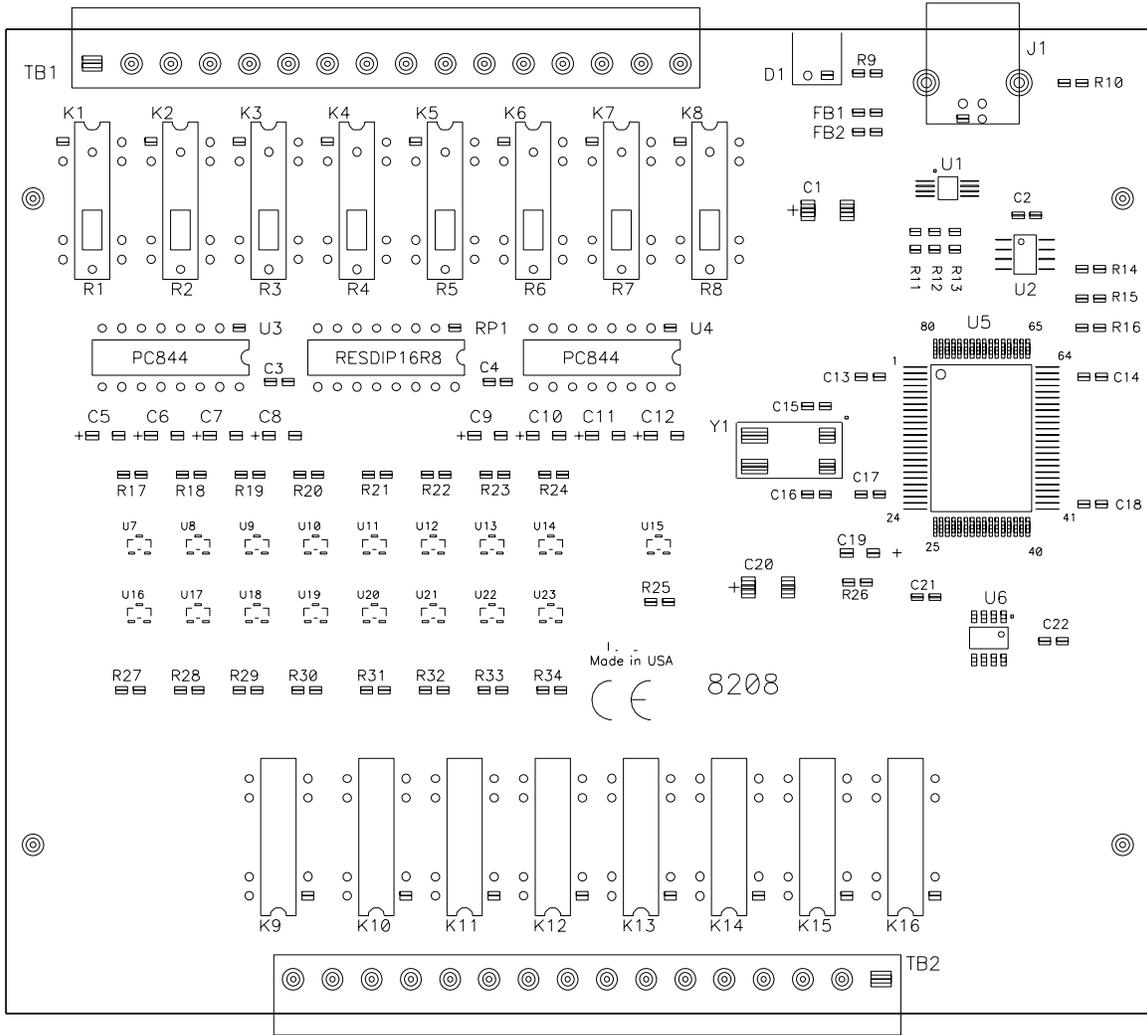
Appendix C - Compliance Notices

Federal Communications Commission Statement

FCC - This equipment has been tested and found to comply with the limits for Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in such case the user will be required to correct the interference at the users expense.

EMC Directive Statement

Products bearing the CE Label fulfill the requirements of the EMC directive (89/336/EEC) and of the low-voltage directive (73/23/EEC) issued by the European Commission.

To obey these directives, the following European standards must be met:

EN55022 Class A - "Limits and methods of measurement of radio interference characteristics of information technology equipment"

EN55024 – "Information technology equipment Immunity characteristics Limits and methods of measurement".

EN60950 (IEC950) - "Safety of information technology equipment, including electrical business equipment"

Warning
This is a Class A Product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures to prevent or correct the interference.

Always use cabling provided with this product if possible. If no cable is provided or if an alternate cable is required, use high quality shielded cabling to maintain compliance with FCC/EMC directives.