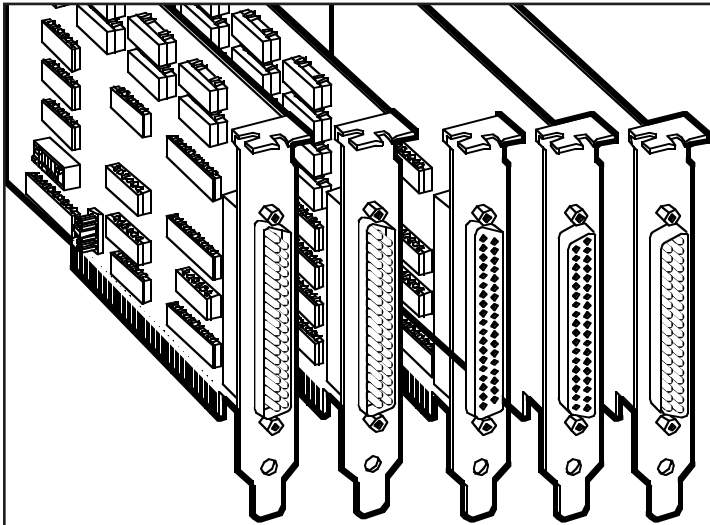# BLACK BOX®
NETWORK SERVICES

RELAY/DIGITAL I/O CARDS

Use your PC to economically control multiple devices with simple ON/OFF switches.

Key Features

▶ ***High-quality reed relays ensure reliability.***

▶ ***Includes drivers for Windows and sample applications.***

▶ ***Three cards to choose from: 8 input/8 output, 16 input/16 output, or 16 output for ISA or EISA;***

▶ ***Cards with optically isolated inputs available.***

▶ ***Easy to install and configure.***

Want to economically monitor and control devices with simple ON/OFF switches from your PC? Then you need a Relay/Digital I/O Card–8 or –16 (IC902C, IC900C). You convert an ISA or EISA bus slot into manageable input/output (I/O) ports.

The IC902C and IC900C cards give you both inputs and outputs on one interface, so you can receive inputs and control external devices with simple ON/OFF switches.

For instance, you can use the cards to control lights, buzzers, switches, and other low-current applications that support ON/OFF control. You can also control test equipment, analog multiplexing and audio switching, and satellite/microwave networks.

The **IC902C** provides 32 channels of isolated digital I/O for your PC. The card contains four ports, each containing eight channels. Ports A and B each offer eight channels of optically isolated inputs. Ports C and D each offer 8 bits of reed-relay

outputs, which allow you to control the ON/OFF status of external devices or other low-current applications. In addition, these ports have nondestructive read-back capability.

What's more, each IC902C input is isolated from ground, host PC ground, and from all other channels, with isolation provided for up to 400 VDC. This protects the card and your equipment from transient spikes and power surges.

The **IC900C** provides the same level of isolation as the IC902C but has eight inputs and eight outputs. And, as with the IC902C, the IC900C features reed relays that can latch power, data, or other electronic signals for control applications and optically isolated inputs for monitoring off-board switches or relay devices. The IC900C and IC902C fit in ISA or EISA slots on your PC.

If you only need an output board, then order the **IC901C**. It offers 16 reed-relay outputs for controlling external applications via ON/OFF closures. To change a

relay's state, simply write to the address corresponding to the relay. All relays power up in an open state.

All three cards come with I/O drivers for Windows 95, 98, and Windows NT. You get a single, high-level programming interface that will work with a variety of hardware products across several operating systems.

The driver software enables you to control individual relays or groups of relays and monitor inputs. See page 2.

Technically Speaking

The IC902C provides four parallel I/O ports. Ports A and B are input ports interfaced to optically isolated inputs, while Ports C and D are reed-relay output ports.

The IC900C, in contrast, has two parallel I/O ports. Port A is an input port interfaced to optically isolated inputs, while Port B is the reed-relay output port.

Port A on both cards is an 8-bit input port connected to optically isolated input sensors. Each sensor can be used to interface a voltage input and then sense whether the voltage is on or off.

Our third model, the IC901C, provides two parallel I/O ports, which are organised as Ports A and B and are reed-relay output ports. However, they're also output ports with read-back capabilities, meaning that they can be written (output) to and then read back as inputs.

Before installing any of these cards, you'll have to set several jumper straps for each port. For example, you use a DIP switch to configure address selection. As long as the adapter doesn't occupy the same I/O address as another I/O adapter installed in your system, it should work properly. But if there is a conflict, the card's user guide details how to troubleshoot it.

I/O driver advantages:

The I/O drivers (software developed to simplify the installation and operation of relay/digital cards) allow you to concentrate on the details of your application when interfacing with today's mainstream operating systems. This is done through a consistent and straightforward application program interface (API). It includes a utility that lets you easily configure the driver's parameters. Once they're set, the registry is automatically updated, so you won't have to manually edit the registry.

Along with a consistent API, the I/O software provides applications for testing relay and digital I/O channels.

You can also use I/O drivers in a network fallback system. For instance, you could set it up to switch from a satellite network to a land line when you're in need of extra bandwidth. Or use it in a studio-automation application, controlling devices such as cart decks, video recorders, and satellite-positioning equipment.

Each Card Includes:

- Interface adapter
- 3.5" Driver diskette
- Users' manual

Specifications

Channels —
IC900C: (8) input, (8) output;
IC901C: (16) relays;
IC902C: (16) input, (16) output;

Input Range — IC900C, IC902C, :
3 to 12 VDC

Input Isolation — IC900C, IC902C, :
Optical, 400 V

Output Relay — 200 million operations 10-VA resistive load

Throughput — 660 Hz (relay maximum operating speed)

Relay Contact Power Ratings —
10 W maximum

Relay Contact Voltage — 100 VDC or AC maximum

Relay Contact Current — 0.5 A DC or AC RMS maximum

Relay Contact Initial Resistance —
0.15 ohms

Relay Rated Life —
Low load: 200,000,000 closures;
Maximum load: 100,000,000 closures

Relay Contact Speed —

Operate: 0.5 milliseconds;
Release: 0.5 milliseconds;
Bounce: 0.5 milliseconds

Connectors —
IC900C, IC901C: (1) DB37 male;
IC902C, : (1) DB37 male;
(1) DB37 female;

MTBF — >150,000 (calculated)

Temperature —
Operating: 0 to 50°C;
Storage: -20 to +70°C

Humidity — 10 to 90% relative, noncondensing

Power — From the bus

Power Consumption —
Supply line: +5 VDC;
Rating: 270 mA

Size —
IC900C, IC901C: 10.7H x 12.4W cm (4.2"H x 4.9"W);
IC902C: 10.7H x 24.8W cm (4.2"H x 9.75"W);
IC903C: 8.4H x 11.9 Lcm (3.3"H x 4.7"L);
IC904C: 9.9H x 12.7L cm (3.9"H x 5"L)

Ordering Information

ITEM	CODE
Relay/Digital I/O Cards	
ISA	
8 Inputs/8 Outputs IC900C	
16 Inputs/16 Outputs IC902C	
Relay Output Card, ISA, 16 Outputs IC901C	
You may also need:	
DB37 Cable and Terminal Blocks EDN37-SP	