NDTRELAY2 Installation Guide

Introduction

The NDTRELAY2 is an RS-232 relay interface that features: 8 Normally Open Contact Outputs, 4 Digital Inputs, and 16-Bit Contact or TTL Input Event Counters.

The NDTRELAY2 communicates via a standard RS-232 Port, using a three-wire interface. The signals used are Received Data (RC), Transmitted Data (TX), and Ground (GND).

When added to an IOtech Non-Destructive Test system (NDT), or to an IOtech Temporary Online Monitoring and Analysis system (TOMAS), the NDTRELAY2 allows the associated software (eZ-NDT or eZ-TOMAS) to read external discrete signals and open and close relays relative to specified software events. The software controls all functions of the NDTRELAY2. No user programming or setup is required. Refer to your eZ-NDT or eZ-TOMAS documentation for instructions on how to perform NDTRELAY2 I/O operations.
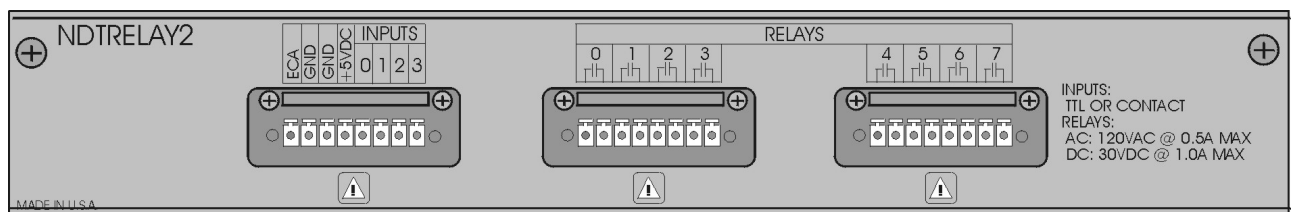
NDTRELAY2, Input and Relay Connectors

Connecting the Communication Cable

<table>
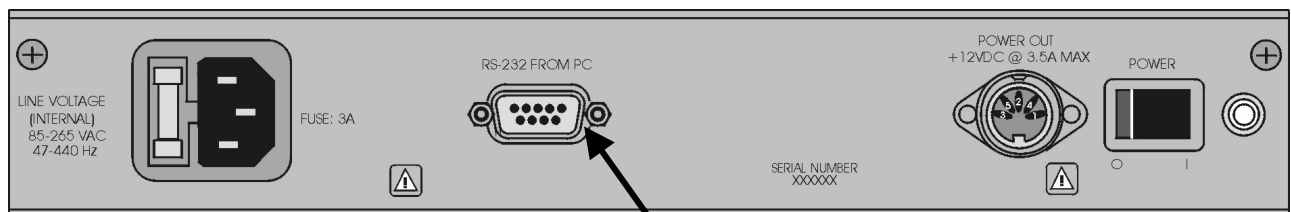<tr><td colspan="2" align="center">WARNING</td></tr>
<tr><td>⚡</td><td>Always turn OFF the NDTRELAY2 and unplug it before making or breaking any connections; or before opening the unit for any reason. Failure to do so could result in electric shock, or equipment damage.</td></tr>
</table>

With power to the NDTRELAY2 turned off (0), connect a null-modem cable to the unit's DB9S connector. The connector is labeled "RS-232 From PC." Connect the other end of the null-modem cable to the host PC's COM Port.

Note that IOtech's PC/AT/XT null-modem serial cable, p/n CA-47, makes a good communication cable.

DB9S - Connects to the PC's COM Port via a null-modem cable, such as IOtech's p/n CA-47.

NDTRELAY2, Power and Communication Connectors

Connecting Digital Inputs and Relay Outputs

Digital Connections

The four Digital Inputs have built-in weak pull-up resistors to allow direct connection of dry contact inputs. These inputs can be from any source, including switches and relays. TTL signal sources [including TTL or NPN type proximity sensors] can also be directly connected to Digital Input connections 0, 1, 2, or 3.

A typical Digital Input connection setup is represented by the following figure. Notice that the contacts (switches) for channels 0, 1, and 2 share a common ground. The digital TTL input is not connected to ground.
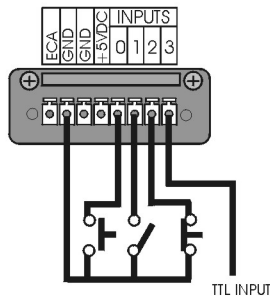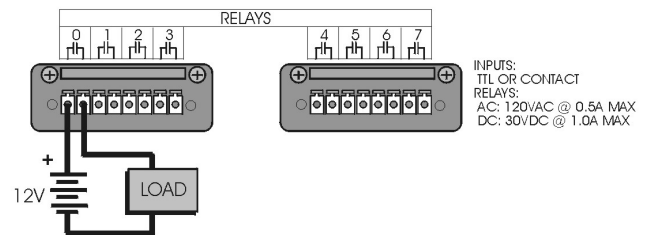
A Typical Setup for Digital Input

Relay Output Connections

NDTRELAY2 has eight normally open relay outputs labeled 0 through 7. The relays are capable of switching AC or DC loads, as follows: up to 1 amp at 30 VDC; up to 0.5 amp at 120 VAC.

A typical connection, for Relay 0, is represented in the following figure.

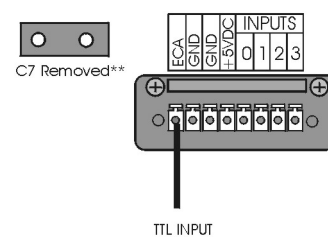*Typical Connection Shown for Relay 0*

Event Counter Connections

The Event Counter can be configured to accept TTL or dry Contact Inputs. Connections for each are represented by the following figures. Events are counted on the rising edge of the input, at which point the TTL signal switches from low to high, or the dry contact opens.
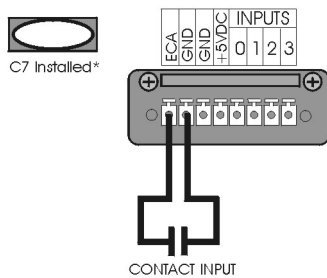
Connecting a Contact Type Input

Connecting a TTL Type Input

Dry Contact Type inputs *must be connected* between Ground and the ECA Input connection.

* For dry Contact Type inputs, debounce capacitor C7 *must be installed* on the Relay Board. See the following figure for location. By default, C7 is installed when the NDTRELAY2 is shipped.

TTL Type inputs are connected directly to the ECA contact.

** For TTL Type inputs, debounce capacitor C7 *must be removed*. See the following figure for location.

Supplying Power to NDTRELAY2

To supply power to the NDTRELAY2, plug the AC power cord into the unit's Line Voltage Receptacle (see following figure, lower image). Plug the other end of the cable into a suitable AC power outlet. Acceptable power is that which is in the range of 85 VAC to 265 VAC, at 47 Hz to 440 Hz.

NDTRELAY2's internal power supply converts the line voltage to +12 VDC. The DC power is made available to external components through the DIN5 Power Out connector, located next to the Power Switch. You can power a ZonicBook from this connector via a CA-115, DIN5 male to DIN5 male Power Cable. Note that an LED, located next to the Power Switch, will light when the NDTRELAY2 is powered On (see following figure, lower image).

Capacitor C7 and Fuse Locations

WARNING
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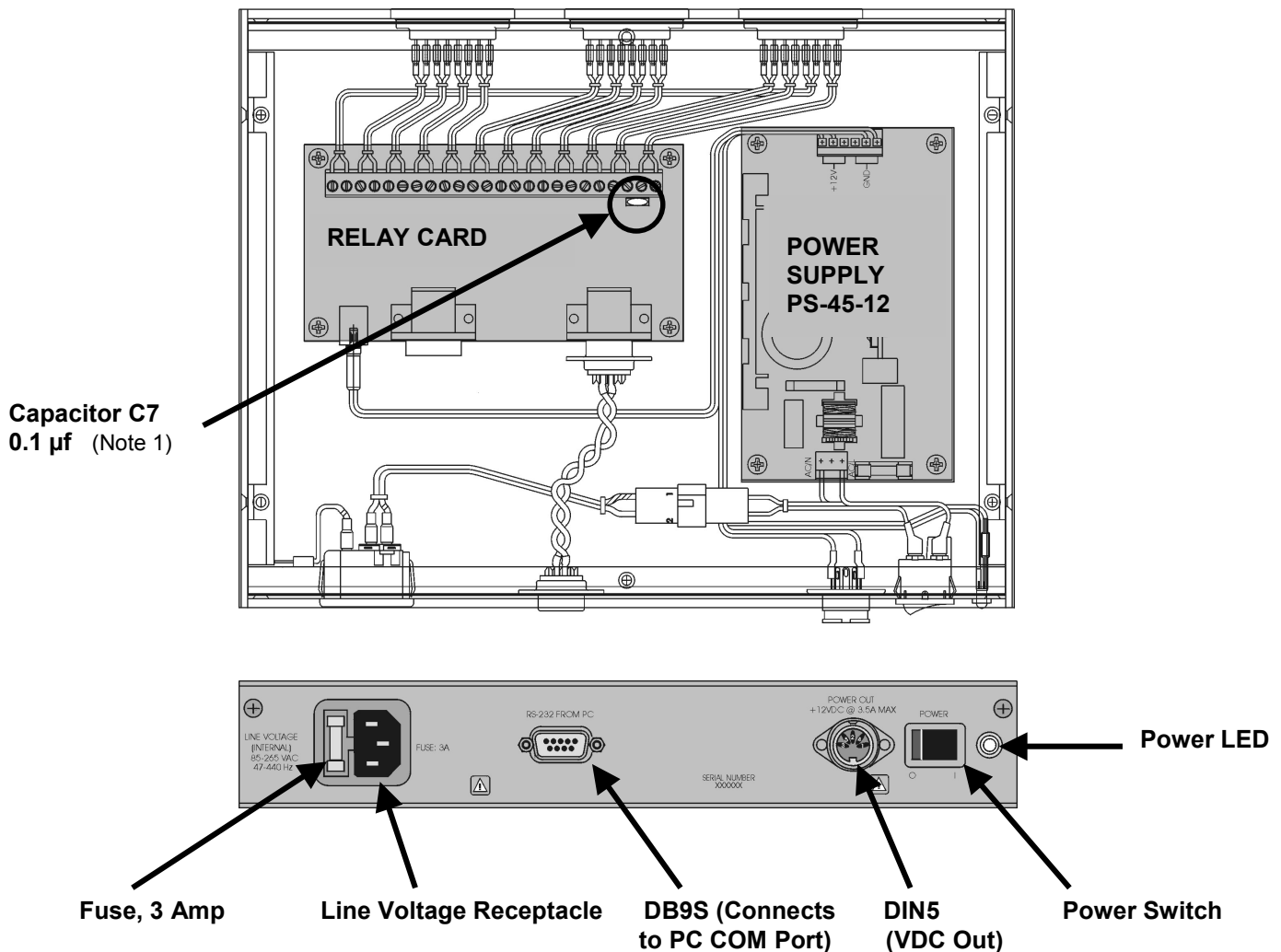
Note 1: For dry Contact Type inputs, debounce capacitor C7 *must be installed* on the Relay Board. For TTL Type inputs, C7 *must be removed*. Refer to *Event Counter Connections,* on page 2 of this document, for connection drawings.

Specifications

Contact Outputs

Quantity	8
Type	SPST, Normally Open
AC Rating	0.5 Amp @ 120 VAC Max.
DC Rating	1.0 Amp @ 30 VDC Max.
Approvals	UL, CSA
Mechanical Life	5 Million Operations, Minimum
Electrical Life	100,000 Operations, Minimum at full-load

Digital Inputs

Quantity	4
Type	TTL or Contact (weak pull-up)
Input Voltage High	4.00 V, Minimum
Input Voltage Low	0.8 V, Maximum

Event Counter

Quantity	1
Type	TTL or Contact
Resolution	16 Bits

Communication Interface

RS232	Standard DB9S (Female)
Configuration	9600 Baud, 8-Bit Words, No Parity, 1 Start Bit

Power

Line Voltage, Input	85 to 265 VAC, 47 to 440 Hz
DC Power Out	+ 12 VDC @ 3.5 A max., via DIN 5 Power Connector

Operating Environment

Temperature	0 to 50°C
Humidity	0 to 95% RH, non-condensing