

# ED-038

## Ethernet to Digital IO Relay

- **3 Digital Inputs and 3 Form A Relays**
- **1 Ethernet Port**
- **Drives high current and high voltage loads ideal for inductive, capacitive and resistive loads**
- **User friendly software interface**  
Simple web based configuration, monitoring and control
- **Legacy compatible**



## Digital Channels

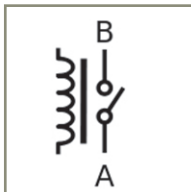
|               |                               |                                                                                                                      |
|---------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Inputs        | Input Channels                | 3 non-isolated input channels                                                                                        |
|               | NPN/PNP                       | Jumper selectable pull up for NPN, active low, type sensors and pull down for PNP, active high, type sensors         |
|               | Logic Level 0:                | 0V to +1V                                                                                                            |
|               | Logic Level 1:                | +3.5V to +30V                                                                                                        |
|               | Latched Inputs:               | Triggered by user programmable positive or negative edges, stays true until acknowledged                             |
|               | Counter Inputs:               | User programmable- counts positive or negative transitions 0-65535                                                   |
| Relay Outputs | Relay Type                    | 3 Form A (SPST: Single Pole Single Throw) - Normally Open<br>When power is removed from the ED-038 the relay is Open |
|               | Contact Rating                | 5 A @ 30 VDC, 5 A @ 250VAC, 5 A @ 110 VAC                                                                            |
|               | Inductive Load                | 2 A                                                                                                                  |
|               | Resistive Load                | 5 A                                                                                                                  |
|               | Breakdown Voltage             | 500 VAC                                                                                                              |
|               | Relay On/Off Time             | 1500 ms (Max)                                                                                                        |
|               | Initial Insulation Resistance | 1G min @ 500 VDC                                                                                                     |
|               | Expected Life                 | 100,000 times (Typical)                                                                                              |
|               | Initial Contact Resistance    | 30 milli-ohms (Max)                                                                                                  |
|               | Pulse Output                  | 0.3 Hz at rated load                                                                                                 |



### Ethernet to DIO Device Server:

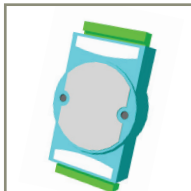
The Ethernet to DIO device is implemented using a Windows COM port driver that is completely compatible with all popular PC packages such as LabView, MATLAB and Agilent VEE and support a range of popular APIs. Continue to get value from your existing development and process control system.

Our software allows hassle free installation, configuration and monitoring via our easy to use webpage. The software gives local COM ports that are backwards compatible enabling legacy applications and the device to work with a myriad of different 3rd party software.



### Relay:

A relay is an electrically operated switch used to control a circuit by a low-power signal giving complete electrical isolation between the control and the controlled circuits. Relays are often used where several circuits must be controlled by one signal.



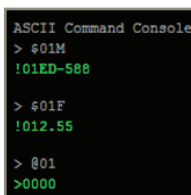
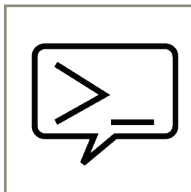
### Familiar ASCII Command Protocol:

The ED range of devices uses the de facto industry standard ASCII command protocol implemented in the popular ADAM/NuDAM/EDAM modules.

Typical examples include:

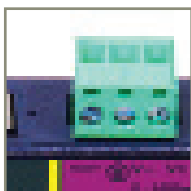
|           |                                                                                   |
|-----------|-----------------------------------------------------------------------------------|
| \$01M     | read the name of device address 01                                                |
| !01ED-588 | device 01 replies that its name is ED-588                                         |
| \$01F     | read firmware version number of device address 01                                 |
| !012.54   | firmware version of device 01 is 2.54                                             |
| @01       | read digital input output status of device 01                                     |
| >1A45     | device 01 digital input data= 1A (=00011010) digital output data = 45 (=01000101) |
| \$012     | read configuration of device 01                                                   |
| !01400500 | device 01 40=typecode, 05 =gateway RS485 port is at 4800 Baud, 00=No checksum     |

The ED device's webpage has an interactive console where any command can be entered and it is immediately executed showing the device's response.



### Wide Range Power Input:

+5VDC to +30VDC accommodates variation in the +24VDC factory floor and allows alternative power sources.



### Watchdog feature:

Allows independent known good states to be set for power up, comms link watchdog and hardware watchdog. Programmable time range allows full control.



### Lifetime Warranty and Support:

We can help with every aspect of your project, from getting you up and running to custom application.



## Software Development

### COM Port on Windows

On a PC running the Microsoft Windows family of OS's the ED Boost.IO Manager provides a standard COM port interface so enabling thousands of proven legacy applications to work straight out of the box. COM port compatibility allows you to continue to get value from your existing application software investment. Moreover your engineers don't need to retrain to use the Brainboxes ED range of I/O devices.

### Industry Standard Packages

The COM port based driver means that ED-xxx devices are completely compatible with all popular packages such as: LabView, MATLAB, Agilent VEE. You can continue to get value from your existing development and process control system. Hundreds of thousands program with these packages every day.



### Software Platforms

The future is mobile, with data available everywhere on demand; Brainboxes has designed a software suite which allows you to design your new systems with mobile in mind with most popular platforms and development environments supported. With APIs and sample program code for: Microsoft .NET, C#, Visual Basic, C++, JavaScript, PHP, Java, Objective-C



### Devices Supported

The ED sample codes running on Operating Systems such as Windows XP, Server 2008, Server 2012, Windows 7, Windows 8, and Linux based systems such as Android and Raspberry Pi allow you to run your applications on Servers, Desktops, Laptops, Tablets, Phones or low cost embedded devices, almost any device you wish.



### Configuration Options

Windows Utility, Web Interface: Boost.IO driver provides familiar Serial COM port interface

### OS Compatibility

Legacy COM porty drivers for: Microsoft Windows 8 32 bit & 64 bit Editions / Microsoft Windows 7 32 bit & 64 bit Editions / Windows Server 2008 32 bit & 64 bit Editions / Windows Server 2008 & Windows 2000 / Windows Vista 32 bit & 64 bit Editions / Windows Server 2003 32 bit & 64 bit Editions. TCP and web browser interface for other OS's & Linux, e.g. Android, Raspberry Pi



## Ethernet

### Ethernet Port

1 x RJ45 jack, 10/100Mhz autosensing, crossover auto sensing (Auto MDIX)

### Protection

1,500Volts magnetic isolation between I/O ports and network

### Network Protocols

ICMP, IP, TCP, DHCP, Telnet, HTTP

### Connection to Network

Ethernet 10BaseT / 100BaseTX

## Watchdog

### Power up

On power up all outputs go to user programmable power on known good state

### Watchdog coms link

On loss of communications link all outputs go to a user programmable watchdog comms known good state.

### Watchdog hardware timer

If the firmware does not refresh the watchdog timer within a predetermined interval then all outputs go to a user programmable watchdog hardware good state

### E-Stop function

When a user programmable input transitions to a preconfigured high or low state then all outputs go to a user programmable E-Stop known good state

## Browser Interface

### Webserver Interface

Configure IP address, monitor state of i/o lines, set the Watchdog Timers Output Reset Value, Set Power on digital output value.

Use the interface console to talk to the device, accepts the full ASCII command set.

Monitor CPU temperature and see visual display of inputs and outputs.



## Housing and connectors

IP-30 rated non-conducting polyamide case with integrated DIN rail mount

|                |                                                              |
|----------------|--------------------------------------------------------------|
| DIO Terminal   | 10 way x 0.2inch/5.08mm pitch removable screw terminal block |
| Power Terminal | 3 way x 0.2inch/5.08mm removable screw terminal block        |

## Power Supply

|                    |                                                             |
|--------------------|-------------------------------------------------------------|
| Power Consumption  | 2.5 Watt Max                                                |
| Power Supply input | unregulated +5V to +30Volts DC, reverse polarity protection |
| Isolation          | 1500VRMS Magnetic isolation from Ethernet                   |

## Environmental

|                           |                                 |
|---------------------------|---------------------------------|
| Operating Temperature     | 0°C to +60°C, +32°F to +140°F   |
| Storage Temperature       | -40°C to +85°C, -40°F to +185°F |
| Ambient Relative Humidity | 5 to 95% (non-condensing)       |

## LED Information

|            |                                     |                            |
|------------|-------------------------------------|----------------------------|
| Status LED | Green                               | Device Ready               |
|            | Flashing Yellow                     | Changing Settings          |
|            | Flashing between Red & Green        | Querying IP                |
|            | Flashing Green/Red                  | User performing Hard Reset |
|            | Flashing between Green & Red/Yellow | IP address diagnostic      |
|            | Flashing between Green & Yellow     | Initialization diagnostic  |
| Link LED   | Green light on                      | Network Link Established   |
|            | Flashing Green                      | Network Data RX/TX         |
| Activity   | Flashing Green                      | Output set / Input Read    |
|            | Flashing Red                        | Output overload            |

## Packaging Information

|                     |                                                                                           |
|---------------------|-------------------------------------------------------------------------------------------|
| Packaging           | Installation CD including manual, Microsoft signed drivers & utilities, Quick Start Guide |
| Packaged Weight     | 0.210 kg, 0.46 pounds                                                                     |
| Packaged Dims       | 150(l) x 150(w) x 50(h) mm, 5.9(l) x 5.9(w) x 2.0(h) inches                               |
| GTIN Universal Code | 837324009835                                                                              |

## Approvals

|                          |                                                                                                                                                                                                          |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Industry Approvals       | CCC-Mark, C-Tick, Microsoft Certified Gold Partner, WEEE, RoHS, METL                                                                                                                                     |
| Microsoft Approvals      | AEO (C-TPAT)                                                                                                                                                                                             |
| Microsoft Signed Drivers | Windows 8 32 bit & 64 bit Editions<br>Windows 7 32 bit & 64 bit Editions<br>Windows Server 2008 32 bit & 64 bit Editions<br>Windows Server 2008 & Windows 2000<br>Windows Vista 32 bit & 64 bit editions |

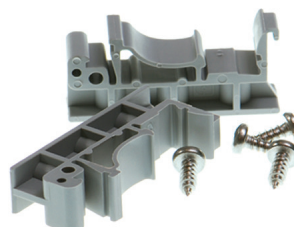


## PW-600 Optional Global Power supply



Power supply with connectors for UK, USA, EU and AUS mains socket. 'Tails' are suitable for connecting to screw terminal blocks

## MK-048 Optional DIN Rail Mount



Can be attached to device to enable snap on DIN rail mounting