

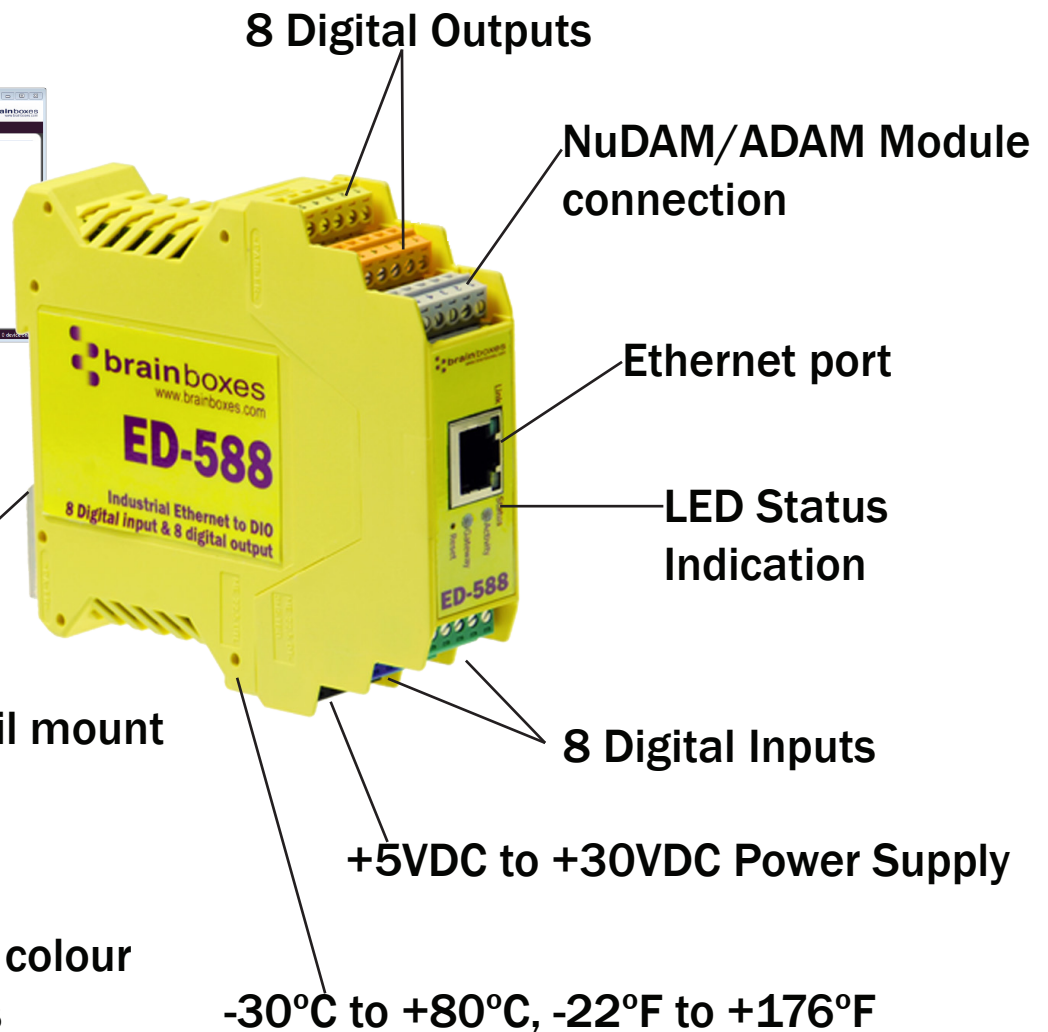
**ED-588 ETHERNET TO Digital IO 8 Inputs + 8 Outputs**

# ED-588

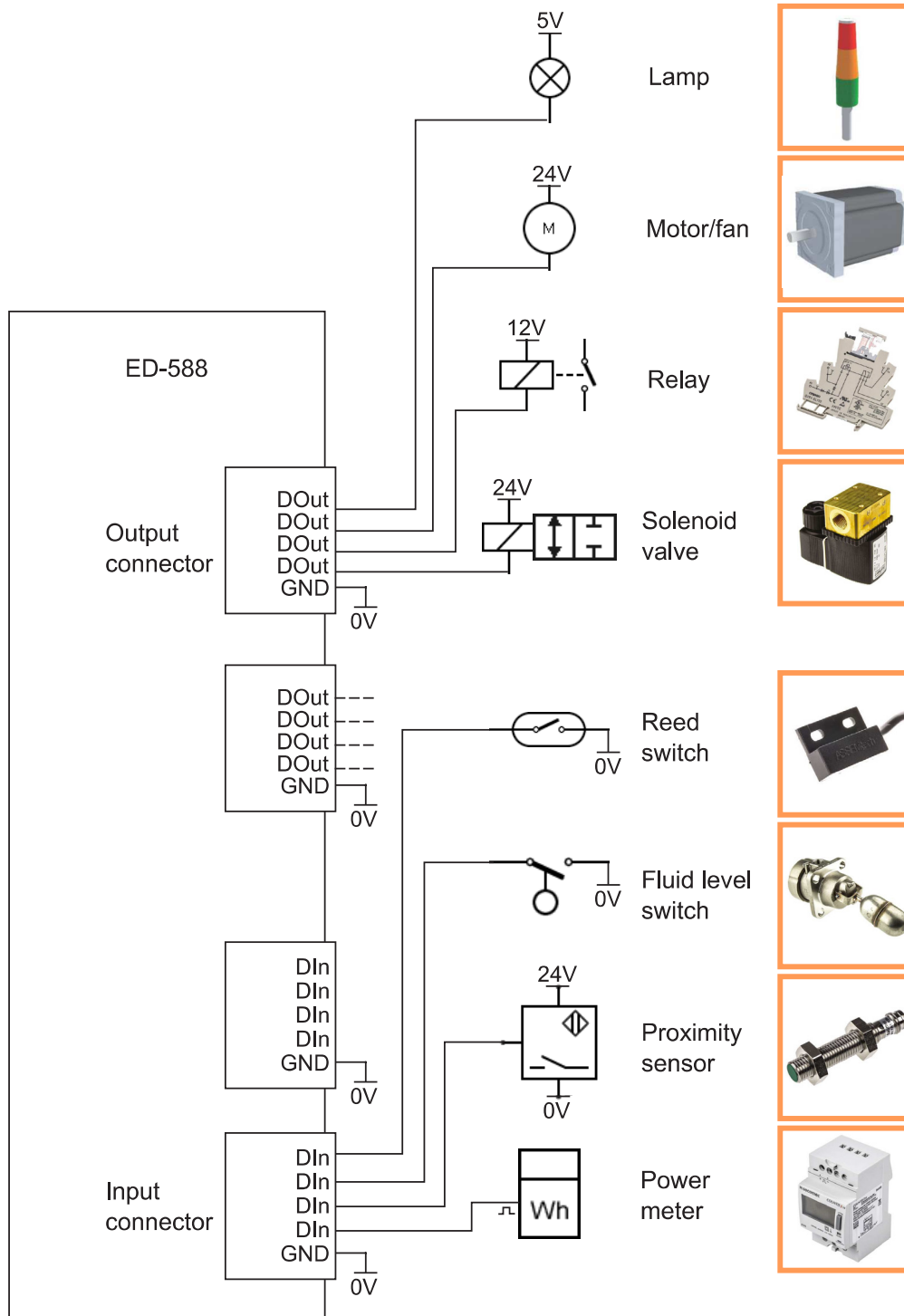
- 8 Digital Inputs and 8 Digital Outputs
- Drives high current and high voltage loads - Ideal for inductive, capacitive & resistive loads
- Factory floor process control and automation
- Supports Modbus TCP protocol



**Easy to use Interface:  
Great features for  
remote monitoring**



**Easy wire: removable, colour  
coded terminal blocks**

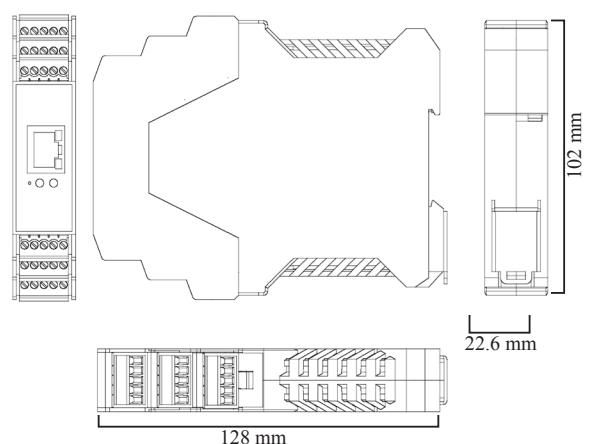


## Specification

|                                    |   |
|------------------------------------|---|
| <b>Input Channels</b>              | <b>8 non-isolated input channels</b>  |
| <b>Low Logic Level</b>             | <b>0V to +1.0V</b>  |
| <b>High Logic Level</b>            | <b>+2.0V to +30V</b>  |
| <b>NPN/PNP</b>                     | <b>One jumper configures all inputs with either pull-up for NPN (contact closes to 0V) type sensors, or pull-down for PNP (close to V+) type sensors</b>  |
| <b>Input counting</b>              | <b>User programmable – counts positive or negative transitions<br/>Up to 250Hz count rate<br/>16-bit (65335 count) or 32-bit (4.2 billion count) counters<br/>Counter values persist over power-off periods</b>                   |
| <b>Input latching</b>              | <b>Triggered by user programmable positive or negative edges, stays true until acknowledged</b>   |
| <b>Debouncing</b>                  | <b>User programmable debouncing for noisy contact inputs</b>  |
| <b>Output Channels</b>             | <b>8 non-isolated output channels</b>   |
| <b>Output Type</b>                 | <b>Current sink to 0V (low-side switch, open-drain MOSFET output), allowing loads at multiple voltages</b>  |
| <b>Maximum output current</b>      | <b>0.85A on all outputs simultaneously (ambient temperature ≤ 70 °C, 1m/s airflow)<br/>0.5A on all outputs simultaneously (ambient temperature 70-80 °C, 1m/s airflow)<br/>Outputs can be paralleled for higher current loads</b> |
| <b>Maximum output load Voltage</b> | <b>36V</b>  |
| <b>Protection</b>                  | <b>Intelligent short circuit protection up to 36V<br/>Over-temperature shutdown<br/>ESD Protection to 16kV</b>  |

**IP-20 rated non-conducting polyamide case**  
**Integrated DIN rail mount with functional earth connection**  
**Slim shape has a small foot print for when DIN rail space is a premium**

**Removable screw terminal blocks make installation easier and quicker**  
**Colour coded blocks and ports prevents incorrect connection**  
**Numbered Pins simplifies wiring and removes confusion**



|                        |   |
|------------------------|---|
| <b>Screw Terminals</b> | <b>3.5mm pitch, #22 - #14, 0.5mm<sup>2</sup>-2.5mm<sup>2</sup> pin power supply</b>                           |
| <b>Wire Thickness</b>  | <b>0.150 inch, 3.81mm, 20 pins, 12+8 screw terminals, #26 - #16 AWG, 0.14mm<sup>2</sup>-1.3mm<sup>2</sup></b> |

**Operating Temperature**      +30°C to +80°C, -22°F to +176°F  
**Storage Temperature**        -40°C to +85°C, -40°F to +185°F  
**Ambient Relative Humidity**    5 to 95% (non-condensing)

Monitor CPU temperature via the web interface or programmatically using ASCII commands.

Redundant dual power input allows a second power supply to be fitted as a back-up to prevent down time should one power source fail.

Can use a 5 Volt power from any computer USB port via optional accessory cable PW-650 - Useful for configuring the device from a laptop in the field.

**Power Consumption**            2.5 Watt Max  
**Power Supply input**            Unregulated +5VDC to +30VDC, reverse polarity protection  
**Isolation**                        1500 VRMS Magnetic isolation from Ethernet

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

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

**Network Protocols**            ICMP, IP, TCP, DHCP, Telnet, HTTP

**Connection to Network**      Ethernet 10BaseT / 100BaseTX

**Webserver Interface**          Configure IP address, monitor state of I/O lines, set the Watchdog Timers Output Reset Value, Set Power on digital output value

**Programming Interface**        No device driver needed, just open a TCP connection and send simple ASCII or Modbus commands. Software drivers give local COM Port interface for communication.

**Utility Programs**            Find device, configure IP address, test communication with console

**Industry Standard Modbus TCP Protocol:**

Device works as a Modbus TCP server. Modbus TCP can be used on the input and output lines.

Examples include:

|                          | Modbus access type | Supported Modbus function codes | Logical address | 984 style address | IEC 61131 address |
|--------------------------|--------------------|---------------------------------|-----------------|-------------------|-------------------|
| Read digital inputs      | Coil               | 1                               | 0x0020...       | 00033...          | %M32...           |
| Read digital inputs      | Discrete input     | 2                               | 0x0000...       | 10001...          | n/a               |
| Read digital inputs      | Input register     | 4                               | 0x0020          | 30033             | n/a               |
| Read DI counter values   | Input register     | 4                               | 0x0000...       | 30001...          | n/a               |
| Read DI counter values   | Holding register   | 3                               | 0x0000...       | 40001...          | %MW0...           |
| Clear DI counters        | Coil               | 5, 15                           | 0x0200...       | 00513             | %M512...          |
| Set/read digital outputs | Coil               | 1, 5, 15                        | 0x0000...       | 00001...          | %M0...            |
| Set/read digital outputs | Holding register   | 3, 6, 16                        | 0x0020          | 40033             | %MW32             |
| Output overload flags    | Discrete input     | 2                               | 0x0400...       | 11025...          | n/a               |
| Output overload flags    | Input register     | 4                               | 0x0400          | 31025             | n/a               |

## Familiar ASCII Command Protocol:

When not using Modbus the ED range of devices can use the de facto industry standard ASCII command protocol implemented in the popular ADAM/NuDAM/EDAM modules. 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     |

|                                   |  |
|-----------------------------------|--|
| <b>COM Port on Windows</b>        | 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.   |
| <b>Industry Standard Packages</b> | The COM port based driver means that ED-xxx devices are completely compatible with all popular packages such as: LabView, MATLAB, Agilent VEE.   |
| <b>Software Platforms</b>         | APIs and sample program code for: Microsoft .NET, C#, Visual Basic, C++, JavaScript, PHP, Java, Objective-C  |
| <b>Devices Supported</b>          | 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.  |
| <b>Configuration Options</b>      | Windows Utility, Web Interface: Boost.IO driver provides familiar Serial COM port interface  |
| <b>OS Compatibility</b>           | Legacy COM porty drivers for: Microsoft Windows 10 32 bit & 64 bit Editions / Microsoft Windows 8 32 bit & 64 bit Editions / Microsoft Windows 7 32 bit & 64 bit Editions / Windows Server 2008 32 bit & 64 bit Editions / Server 2012/ Windows Server 2008 & Windows Server 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 |
| <b>Watchdog Power up</b>          | On power up all outputs go to user programmable power on known good state  |
| <b>Watchdog coms link</b>         | On loss of communications link all outputs go to a user programmable watchdog comms known good state.  |

|   |   |
|---|---|
| <b>Watchdog hardware timer</b>                  | 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   |
| <b>Q-Stop function</b>                          | When a user programmable input transitions to a preconfigured high or low state then all outputs go to a user programmable Q-Stop known good state  |
| <b>Industry Approvals</b>                       | C-Tick, AEO (C-TPAT), WEEE, RoHS  |
| <b>Microsoft Approvals &amp; Signed Drivers</b> | Microsoft Certified Gold Partner<br>Windows 10 32 bit & 64 bit Editions<br>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 |
| <b>OEM option</b>                               | Available for bulk buy OEM  |
| <b>Made In</b>                                  | Manufactured in the UK by Brainboxes  |
| <b>Customisable</b>                             | Brainboxes operate a 'Perfect Fit Custom Design' policy for volume users. More info: sales@brainboxes.com   |
| <b>Warranty Support</b>                         | Lifetime - online registration required<br>Lifetime Web, Email and Phone Support from fully qualified, friendly staff who work in and alongside the Product Development Team  |
| <b>Packaging</b>                                | Installation CD (with manual, Microsoft signed drivers & utilities), Quick Start Guide  |
| <b>Device</b>                                   | Ethernet 8 DI + 8 DO  |
| <b>Packaged Weight</b>                          | 0.215 kg, 0.47 pounds   |
| <b>Packaged Dims</b>                            | 235(l) x 170(w) x 62(h) mm, 9.25(l) x 6.69(w) x 2.44(h) inches  |
| <b>GTIN Universal Code</b>                      | 837324003178  |





## Optional Accessories



**PW-600:** Power supply with connectors for UK, USA, EU and AUS mains socket. 'Tails' are suitable for connecting to screw terminal blocks



**PW-650:** USB connector fits any standard USB port, such as on a laptop or desktop PC, providing 5V power to a prewired screw terminal block useful for when you are configuring your ED device