

### ED-516 ETHERNET TO Digital IO 16 Inputs

# ED-516

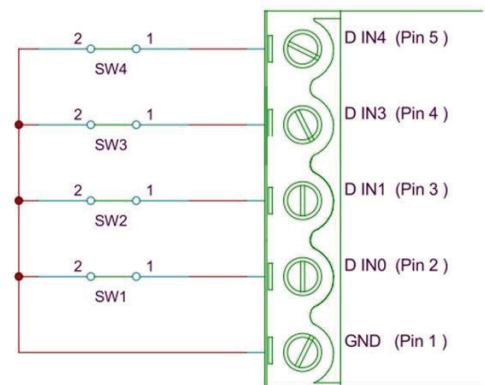
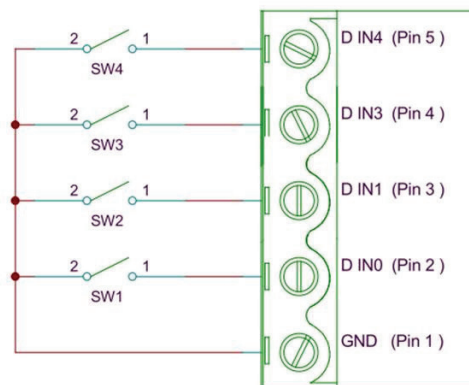
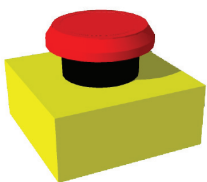
- 16 Digital Inputs
- 0 to 30 Volt inputs ideal for dry/Volt free contacts or wet contacts
- Ideal for inductive, capacitive & resistive load
- Gateway Port for NuDAM/ADAM modules
- -30°C to +80°C Temperature range
- +5V to +30V DC Input Power



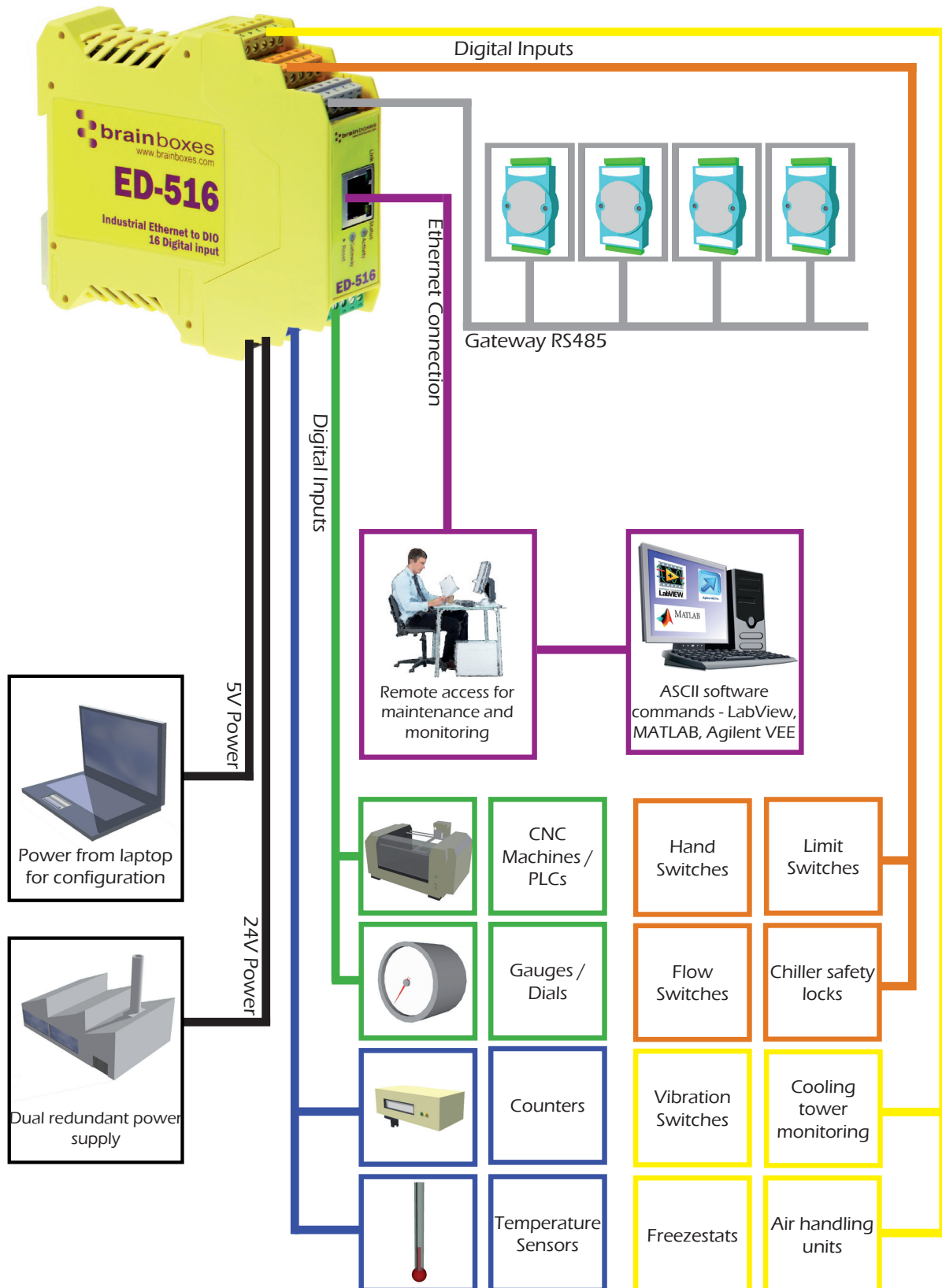
### Digital Channels

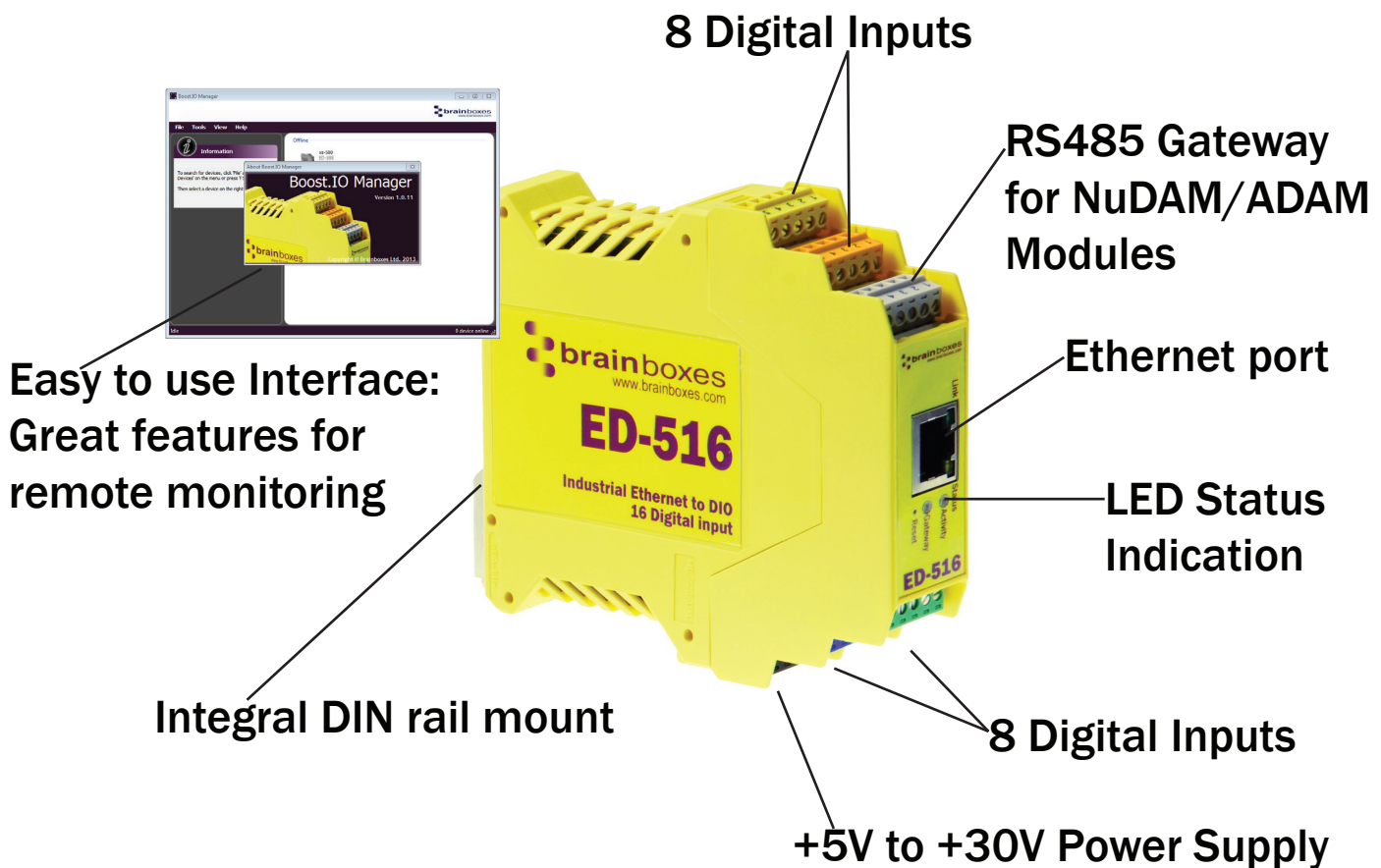
<b>Inputs</b>	<b>Input Channels</b>	16 non-isolated input channels
	<b>NPN/PNP</b>	One jumper configures all inputs as either pull up for NPN, active low, type sensors or pull down for PNP, active high, type sensors
	<b>Logic Level 0:</b>	0V to +1V maximum
	<b>Logic Level 1:</b>	+3.5V to +30V maximum
	<b>Latched Inputs:</b>	Triggered by user programmable positive or negative edges, stays true until acknowledged
	<b>Counter Inputs:</b>	User programmable- counts positive or negative transitions 0-65535

### Dry/Volt free Contact Example



# Usage Model for ED-516





#### 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.



#### Slim Shape:

Small foot print for when DIN rail space is a premium  
Only 22.6mm wide



#### Extended Temperature Range:

-30°C to +80°C operating range copes with changing temperatures for harsh environments. Monitor CPU temperature via the web interface or programmatically using ASCII commands.



#### Brainboxes' Easy Wire Feature:

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



### Grounding:

Correctly wired grounds help cut down on electromagnetic interference  
5 pin terminals allow a ground on the 5th pin of each block  
Functional earth connection to the DIN rail



### Gateway RS485 Serial Port:

Half duplex RS485 port allows connection and control of industry standard NuDAM, eDAM and ADAM modules modules using ASCII protocols.



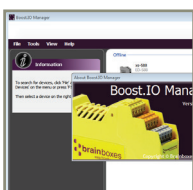
### Wide Range Redundant Dual Power Input:

+5VDC to +30VDC accommodates variation in the +24VDC factory floor and allows alternative power sources. A second power supply can be fitted as a back-up to prevent down time should one power source fail.



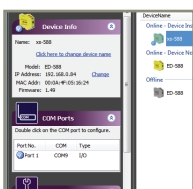
### Power from any USB Port:

Can use 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.



### Signed Drivers and Rigorous testing:

We use continuous automated testing of our in-house drivers and software to ensure when you install one of our devices 'it just works'. 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. We make all our software versions available to download from our website.



### Lifetime Warranty and Support:

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





## 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.

```
ASCII Command Console
> $01M
!01ED-588

> $01F
!012.55

> @01
>0000
```

## 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



## Browser Interface

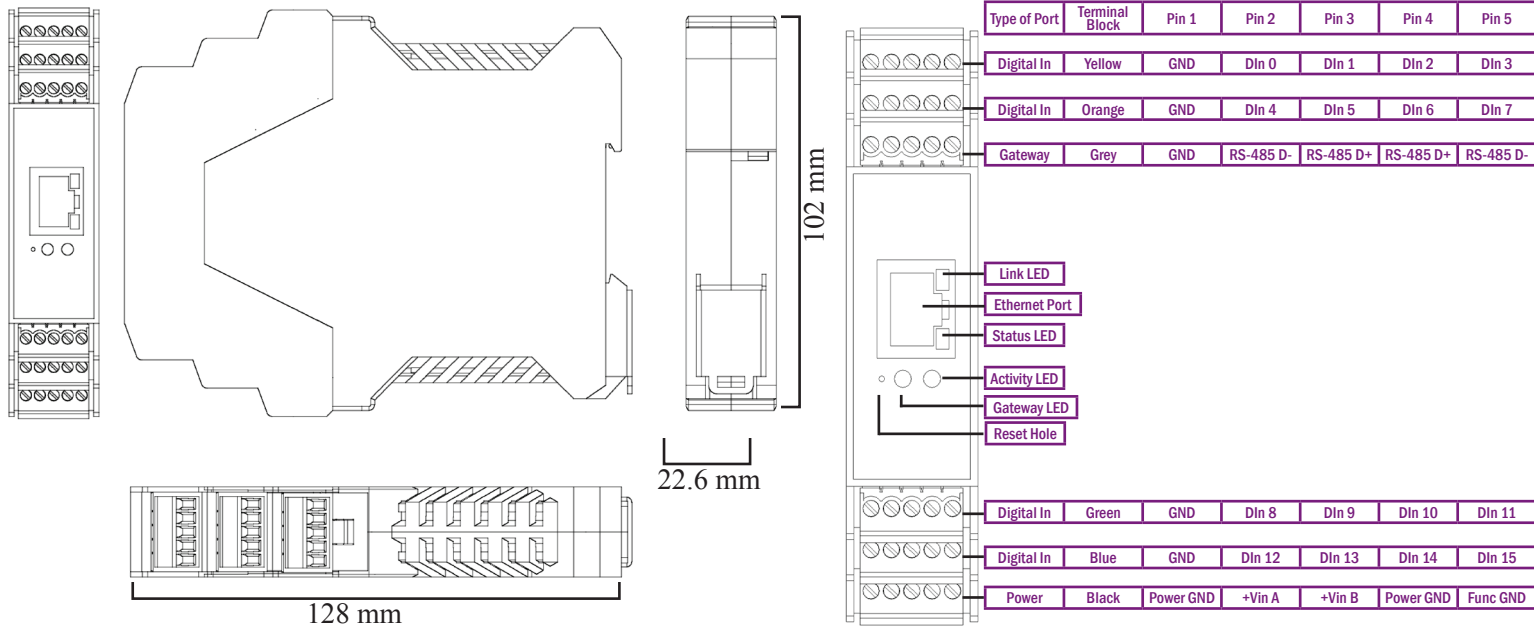
<b>Webserver Interface</b>	Configure IP address, monitor state of i/o lines, set the Watchdog Timers Output Reset Value, Set Power on digital output value
<b>Programming Interface</b>	No device driver needed, just open a TCP connection and send simple ASCII commands. Software drivers give local COM Port interface for configuration
<b>Utility Programs</b>	Find device, configure IP address

## Ethernet

<b>Ethernet Port</b>	1 x RJ45 jack, 10/100Mhz autosensing, crossover auto sensing (Auto MDIX)
<b>Protection</b>	1,500Volts magnetic isolation between I/O ports and network
<b>Network Protocols</b>	ICMP, IP, TCP, DHCP, Telnet, HTTP
<b>Connection to Network</b>	Ethernet 10BaseT / 100BaseTX

## Housing

IP-20 rated non-conducting polyamide case with integrated DIN rail mount



## Connectors

<b>Screw Terminals</b>	3.5mm pitch, #22 - #14, 0.5mm <sup>2</sup> -2.5mm <sup>2</sup> pin power supply
<b>Wire Thickness</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>

## Power Supply

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

## Environmental

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



## LED Information

<b>Status LED</b>	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
<b>Gateway</b>	Flashing Red	RS-485 Comms error
	Flashing Green	RS-485
<b>Link LED</b>	Green light on	Network Link Established
	Flashing Green	Network Data RX/TX
<b>Activity</b>	Flashing Green	Output set / Input Read
	Flashing Red	Output overload

## Approvals

<b>Industry Approvals</b>	CCC-Mark, C-Tick, Microsoft Certified Gold Partner, WEEE, RoHS, METL
<b>Microsoft Approvals</b>	AEO (C-TPAT)
<b>Microsoft Signed Drivers</b>	Windows 8 32 bit & 64 bit Editions 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



## Packaging Information

<b>Packaging</b>	Installation CD including manual, Microsoft signed drivers & utilities, Quick Start Guide
<b>Device</b>	Ethernet 16 DI
<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>	837324003185

## Product Support

<b>Warranty</b>	Lifetime - online registration required
<b>Support</b>	Lifetime Web, Email and Phone Support from fully qualified, friendly staff who work in and alongside the Product Development Team



## Additional Information

<b>OEM option</b>	Available for bulk buy OEM
<b>Made In</b>	Manufactured in the UK by Brainboxes Winner 2005 European Electronics Industry Awards 'Manufacturer of the Year'
<b>Customisable</b>	Brainboxes operate a 'Perfect Fit Custom Design' policy for volume users. More info: sales@brainboxes.com

## Optional Accessory Items

### PW-600 Global Power supply



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

### PW-650 5V from USB Power supply



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