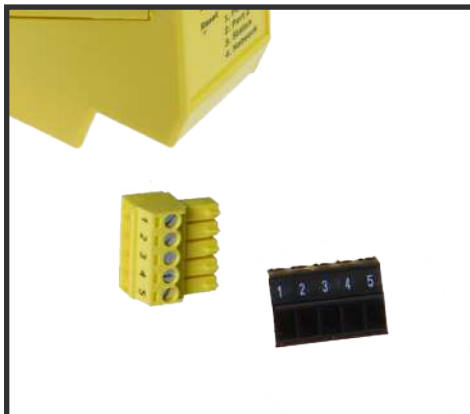


## ES-522 Industrial Ethernet Serial

2xRS232/422/485 Industrial Ethernet to Serial

- 2 Serial ports Selectable as RS232/422/485
- Max baud rate 1 MegaBaud, any Custom Baud Rate
- 1 10/100Base TX Ethernet Port
- -30°C to +80°C/-22°F to +176°F Temperature range



Non conducting polyamide casing with removable numbered terminal blocks for easy wiring



+5 to +30 Volt Power Input enables the device to be run from USB, a vehicle battery or the factory floor



Integral DIN mount and slim design takes up minimal cabinet space



## ED-522

## Industrial Ethernet to Serial

Serial Port Tunneling allows serial cable replacement over any distance, no software required

Easy Wire Removable screw terminal blocks

Integral DIN rail clip with earth

State of the art Autogating for trouble free RS485 Half Duplex flow control

IP20 Non-conducting polyamide case with vents



2 Port Serial Software selectable as RS232/422/485

-30°C to +80°C / -22°F to +176°F temperature range

Ethernet Port

LED status indication

Wide Range Input Power: +5VDC to +30VDC

### Connectors

Screw Terminals	3.5mm pitch, #22 - #14, 0.5mm <sup>2</sup> -2.5mm <sup>2</sup> pin
Conductor Wire	28 to 16 AWG, 0.14mm to 1.5mm Max

### Power Supply

Power Supply input	Unregulated +5V to +30Volts DC, reverse polarity protection
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### Environmental

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)

### Magjack LED Information

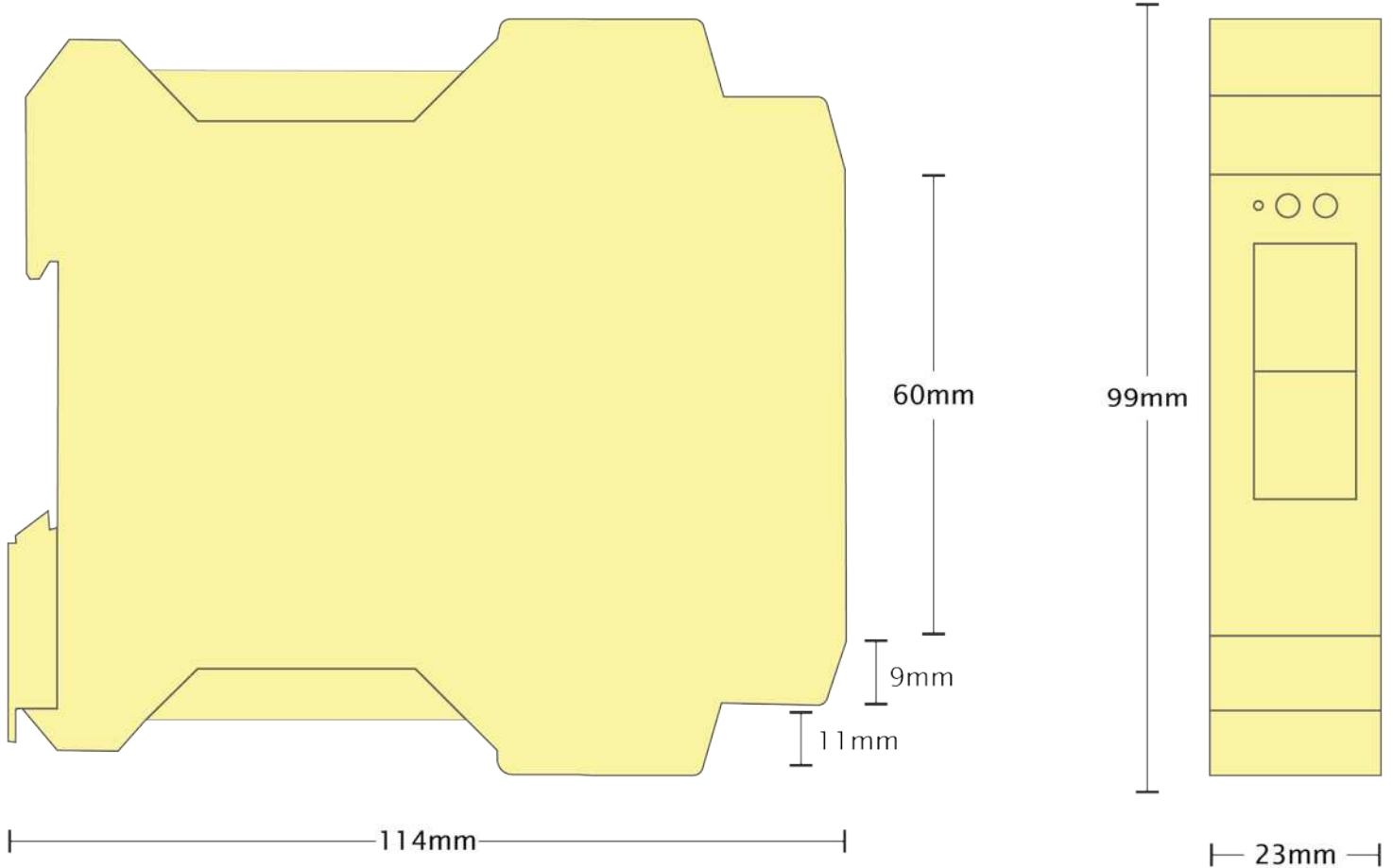
Status LED	Serial Port LEDs	Network LED	Device Ready
Green	Green light on	Green light on	Device Ready
Flashing Yellow	Flashing Green	Flashing Green	Changing Settings
Flashing between Red & Green	Flashing Green/Red	Flashing Green	Querying IP
Flashing Green/Red	Flashing between Green & Red/Yellow	Flashing Green	User performing Hard Reset
Flashing between Green & Red/Yellow	Flashing between Green & Yellow	Flashing Green	IP address diagnostic
Flashing between Green & Yellow	Green light on	Flashing Green	Initialization diagnostic
	Flashing Green	Flashing Green	Port Open
		Flashing Green	Data RX/TX
		Flashing Green	Link Established
		Flashing Green	Data RX/TX

### Ethernet

Ethernet Port	RJ45 jack, 10/100Mhz autosensing, crossover auto sensing (Auto MDIX)
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# ES-522 Industrial Ethernet to Serial

Housing IP-20 rated non-conducting polyamide case



Terminal Block Pin Outs: Yellow Block= Port 1 Grey Block= Port 2

Yellow Block	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
RS232	Sig GND	CTS	RxD	RTS	TxD
RS422/485 FD	Sig GND	RxD-	RxD+	TxD+	TxD-
RS485 HD	Sig GND			Data+	Data-

Black Block	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
Power	-V	+V A	+V B	-V	Func GND

Ethernet Port Pin Outs

PIN	FUNCTION
1	RD+ / TD+
2	RD- / TD-
3	TD+ / RD+
4	NC
5	NC
6	TD- / RD-
7	NC
8	NC

## Lifetime Warranty and Support:

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

## ES-522 Industrial Ethernet to Serial

### 2xRS232/422/485 Industrial Ethernet to Serial

#### Serial Port

Ports Software Selectable as RS232, RS422/485 Full Duplex, or RS485 Half Duplex

Port Settings - Software Selectable as RS232, RS422/485 Full Duplex, or RS485 Half Duplex

Baud Rate Any custom Baud rate between 60 - 1,000,000 (1 MegaBaud) can be selected

Data Bits 5,6,7 or 8

Parity Odd, Even, None, Mark or Space

Stop Bits 1, 1.5 or 2

Flow Control RTS/CTS, DSR/DTR, XON/XOFF

**Tx/Rx Modes**

**RS232 Standard:** RS232 allows point to point communication between 2 devices.

**RS422 Standard:** RS422 allows one transmitter and up to 10 receivers with data transmitter rates up to 10 megabits per second for distances up to 40 feet and up to 100 Kilobits per second for distances up to 4,000 feet (1219 metres). To achieve good long distance noise immunity, 2 wires are used to carry each signal, configured as a twisted pair of cables. The TXD pair and RXD pair are used to carry the data whilst the RTS pair and CTS pair lines are used for handshaking. Thus 2 twisted pairs are used without handshaking and 4 twisted pair cable is used with handshaking both these schemes allow full duplex data communications.

**RS485 Standard:** RS485, based on the RS422 standard allows up to 32 driver/receivers pairs on a standard load or 128 low load devices per port can be connected. Whilst only one of these should be transmitting data at any time, the rest can all simultaneously listen to the data. Handshaking is performed by software protocol. Two twisted pairs form a full duplex system. Often only one twisted pair cable is used as the TXD and RXD lines are tied together; this is known as half duplex mode. Brainboxes RS422/485 products implement a state of the art hardware autogating circuit ensuring error free communications in half duplex configurations.

Industrial Ethernet to Serial RS485: receivers are 1/8<sup>th</sup> load allowing upto 256 nodes on the bus. Fail safe open circuit and short circuit protection, protects the Industrial Ethernet to Serial against wiring faults.

Line Terminating Resistor: On board RS485 line termination resistor can be enabled by a user selectable jumper. The RS422/485 line terminating resistor prevents signal reflections when the ES device is at the end of transmission line.

Bias Resistors: On board RS485 Half Duplex fail safe bias resistors enabled by user selectable jumpers. The fail safe biasing resistors pull the line to a known good state during idle times preventing phantom character detection.

#### Power Supply

Power Supply input Redundant DC Dual Power Inputs, reverse polarity protected +5 VDC to +30VDC

Power Consumption 1.6 Watt typical 60mA@24V - 2.9 Watt Max

#### Ethernet

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

Data Rate 10/100 Mega bits/second

Cabling Normal / AUTO MDI/MDIX and IEEE Auto crossover support

## Software

OS Compatibility	Brainboxes' software provides a TCP or Serial COM port interface. All software versions and updates available to download from our website.
Microsoft	Legacy COM port drivers for Microsoft OS up to latest Windows 10
Other	TCP and web browser interface for other OSs & Linux, e.g. Android, Raspberry Pi



Boost.Lan Manager	Lets you find, install virtual COM ports and upgrade devices
Industry Standard Packages	The COM port based driver means devices are compatible with popular packages such as: LabVIEW, MATLAB, Agilent VEE. So you can continue to get value from your existing development and process control system.
Software Platforms	APIs and sample program code for: Microsoft .NET, C#, Visual Basic, and more - www.brainboxes.com



Software	
Network Protocols	ICMP, IP, TCP, DHCP, Telnet, HTTP, RFC2217, BOOTP
Software Platforms	Our software drivers give Windows users local COM ports, allowing you to retain your existing software applications and connect to your devices over the network. COM Port can be assigned from COM 1 to COM 255 and the Brainboxes Ethernet to serial device remembers your COM Port assignment on reboots. For Linux/Apple OS/Android web interface allows secure configuration and control of the serial ports over a local network or the internet using any browser. You can access the device via TCP/IP sockets from any networked device like an Android tablet, PC or phone.

## ES-522

## Industrial Ethernet to Serial

### Packaging Information

Packaging	Installation CD including manual, Microsoft signed drivers & utilities, Quick Start Guide Device
Packaged Weight	0.206 kg, 7.27 ounces
Packaged Dims	160x135x49 mm, 6.3x5.3x1.9 inches
GTIN Universal Code	837324002614

### Approvals

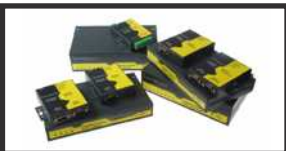
Industry Approvals	Microsoft Certified Gold Partner, WEEE, RoHS, AEO (C-TPAT), CE
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### Product Support

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

### Additional Information

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



### ES Range

Ethernet to Serial products are available in a range of formats and specifications

[www.brainboxes.com](http://www.brainboxes.com)



### 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

Power supply with USB connector and pre-wired screw terminal block. Suitable for use with 5V USB ports.



### MK-588

6 coloured PCB connectors. Individually numbered pins; 5 x 3.5mm pitch screw connections with tension sleeve.