

## ES-551 ETHERNET TO SERIAL DEVICE SERVER

### Ethernet Industrial Iso 1xRS232/422/485

*CONNECT, CONFIGURE, CONTROL YOUR SERIAL DEVICES*



- 1 Serial port Software Selectable as RS232, RS422/485 Full Duplex, or RS485 Half Duplex
- Total Galvanic Isolation
- Max baud rate 1,000,000 (1 MegaBaud), any Custom Baud Rate
- -30°C to +80°C Temperature range
- Integral DIN Rail mount, small foot print

#### Features

- 1 Serial port Software Selectable as RS232, RS422/485 Full Duplex, or RS485 Half Duplex
- Total Galvanic Isolation
- 1 Port Ethernet
- Integrated DIN rail mount and Slim Case
- Brainboxes' Easy Wire: Removable, colour coded, Screw Terminal blocks with individually numbered pins makes wiring fast, simple and error proof
- Extended Temperature Range: -30°C to +80°C
- IP-30 rated non-conducting polyamide enclosure
- LED status indication
- Wide Range Input Power Supply: +5VDC to +30VDC
- Redundant Dual Power Input
- Grounds on every 5th pin. Functional Earth via integral DIN rail mount
- Brainboxes state of the art Autogating for trouble free RS485 Half Duplex flow control
- Max baud rate 1,000,000 (1 MegaBaud), Custom Baud Rates
- 10/100Base TX Ethernet port
- Smart Ethernet: recognises straight and crossover Ethernet cables and works with either
- Serial Port Tunneling allows serial cable replacement over any distance, no software required
- User friendly interface, simple to use, powerful in operation
- Web configuration and RFC2217 compliant interface for non-Windows users
- Simple operation for each and every operating system!
- Life time Support and Lifetime warranty with sign up



## Description

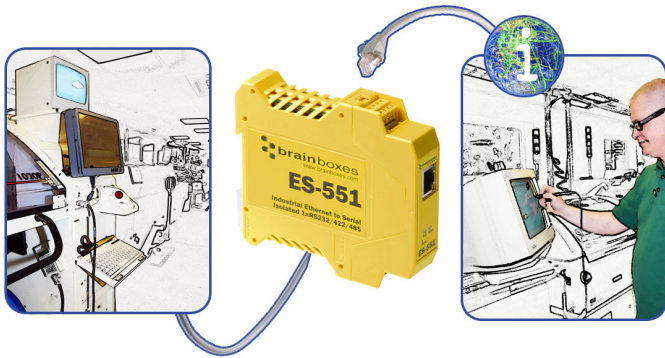
Ethernet to Serial Device with 1 Port software selectable as RS232, RS422/485 Full duplex or RS422 Half duplex and 2 Ethernet ports. ES-551 has removable Screw Terminals Blocks for easy wiring, a slim 'end on' case and integral DIN rail mount. Our Industrial Ethernet to Serial has an operating temperature range of -30 to +80 degrees Celsius and with +5VDC to +30VDC Dual input reverse polarity protected power supply making it perfect for industrial applications. Data transfer rates up to 1,000,000 baud, coupled with 1Mbit/s line drivers deliver uncompromising performance. Our Industrial ES range provides simple instant networked serial ports in demanding environments. Serial Port Tunneling allows serial cable replacement over any distance, no software required. Suitable to be wired into existing power and network infrastructure or can be used with our PW-600 power supply.

**Windows Users** - Our software drivers give you 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.

**Web Interface Users (Linux/Apple OS/Android)** - A 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.

Extend your reach! Remote serial devices with local control. With Brainboxes industry renowned Lifetime Warranty and Lifetime Support!

## Example Application



# ES-551 Factory Floor Application



Factory floors can be harsh environments. Extreme temperatures can be generated in the manufacturing process, machinery can be noisy and generate electromagnetic interference and space is a premium. But engineers still need to be able to access and maintain equipment safely and without downtime. As factories expand and modernise older equipment and remote devices need to be networked, but cabling can be expensive and impractical, especially over larger areas.

The ES-551 with total galvanic isolation has 1 serial port that is software selectable as either RS232, RS422 or RS485 and 1 Ethernet port. The 'Easy Wire' removable colour coded Screw Terminals Blocks are individually numbered for simple fast, error free wiring. The slim 'end on' case with integral mount clips straight on to a DIN Rail. The ES-551 has an operating temperature range of -30°C to +80°C and +5VDC to +30VDC Dual input reverse polarity protected power supply. Brainboxes proven technology supports legacy applications, whilst our Ethernet to Serial software ensures fast data transmission and a super easy installation whatever your operating system.

Once your Serial equipment is connected to a Brainboxes Ethernet to Serial device you have the option of accessing it over a local network or connecting it to the internet. The devices can be fitted in areas where it would be dangerous for workers to monitor whilst the factory line is in operation. Manufacturing process and performance across a large site can be monitored and potential faults detected before they cause serious downtime costs. The total galvanic isolation prevents problems from sources of electromagnetic interference. Use two devices back to back for serial tunnelling over Ethernet, for when you need to extend the reach of your serial cables.



## Feature Profile



### Slim Shape:

Small foot print for when DIN rail space is a premium

Only 22.5mm wide



### Extended Temperature Range:

-30°C to +80°C operating range copes with changing temperatures for harsh environments

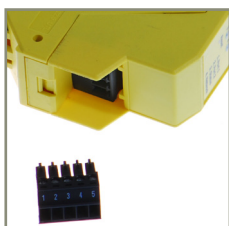


### Brainboxes' Easy Wire Feature:

Removable screw terminal blocks make installation easier and quicker

Colour coded blocks and ports prevents incorrect connection

Numbered Pins simplifies wiring and removes confusion



### Redundant Dual Power Input:

A second power supply can be fitted as a back-up to prevent down time should one power source fail.

### Wide Range Input Power Supply:

+5VDC to +30VDC accommodates variation in the +24VDC factory floor and allows alternative power sources. Can use 5 Volt power from any computer USB port.



### Total Galvanic Isolation:

The power supply, Serial port and Ethernet ports are all mutually isolated from each other. Prevents electromagnetic interference problems, this is useful for applications in electromagnetically noisy environments such as processes involving power generators, motors, arc furnaces, induction heaters etc.



### 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



### Smart Ethernet:

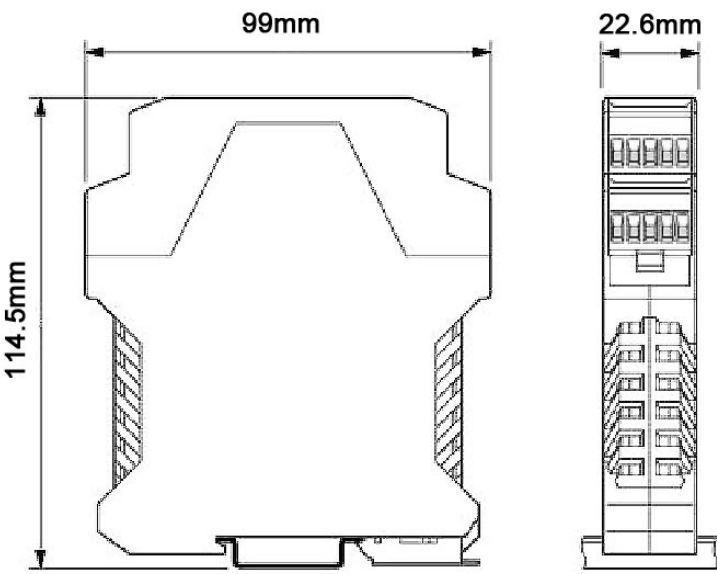
Recognises and works with both straight and crossover Ethernet cables (Auto MDI/MDIX)

Mag Jacks are isolated offsetting any difference in grounds between Ethernet nodes.

### Inbuilt Ethernet Switch (ES-571 only):

Allows two port devices to be 'daisy chained' extending the reach of Ethernet cabling for an instant infrastructure upgrade

## Enclosure Specification



Port 1 - Yellow	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
RS232	Iso GND	CTS	RxD	RTS	TxD
RS485 FD	Iso GND	RxD-	RxD+	TxD+	TxD-
RS485 HD	Iso GND			Data+	Data-
Power Input - Black	Power GND	+Vin A	+Vin B	Power GND	Func GND
Input +5V to +30V DC 60mA@24V 1.6W Typical 120mA@24V 2.9W Max					

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

## Environmental

**Operating Temperature** -30°C to +80°C  
**Storage Temperature** -40°C to +85°C  
**Ambient Relative Humidity** 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
<b>Serial Port LEDs</b>	Flashing between Green & Yellow	Initialization diagnostic
	Green light on	Port Open
<b>Network LED</b>	Flashing Green	Data RX/TX
	Green light on	Link Established
	Flashing Green	Data RX/TX



## Port - Serial

<b>Ports</b>	1 port Software Selectable as RS232, RS422/485 Full Duplex, or RS485 Half Duplex
<b>Connector</b>	Removable Screw terminal block connector - 3.5 mm pitch
<b>Power Input</b>	Redundant DC Dual Power Inputs, reverse polarity protected +5 VDC to +30VDC
<b>Power Consumption</b>	1.6 Watt typical 60mA@24V - 2.9 Watt Max
<b>Conductor Wire</b>	28 to 16 AWG, 0.14mm to 1.5mm Max

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

<b>Baud Rate</b>	Any custom Baud rate between 60 - 1,000,000 (1 MegaBaud) can be selected
<b>Data Bits</b>	5,6,7 or 8
<b>Parity</b>	Odd, Even, None, Mark or Space
<b>Stop Bits</b>	1, 1.5 or 2
<b>Flow Control</b>	RTS/CTS, DSR/DTR, XON/XOFF
<b>Tx/Rx Modes</b>	<p><i>RS232 Standard:</i> RS232 allows point to point communication between 2 devices.</p> <p><i>RS422 Standard:</i> 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.</p> <p><i>RS485 Standard:</i> 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.</p> <p><i>Industrial Ethernet to Serial RS485:</i> 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.</p> <p><i>Line Terminating Resistor:</i> 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.</p> <p><i>Bias Resistors:</i> 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.</p>

## Port Settings - Ethernet

<b>Data Rate</b>	10/100 Mega bits/second
<b>Cabling</b>	Normal / AUTO MDI/MDIX and IEEE Auto crossover support IEEE802.1q VLAN support for up to 128 VLAN groups. Broadcast storm protection. IEEE 802.1d rapid spanning tree protocol RSTP support.

## Software

<b>Network Protocols</b>	ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, HTTP, RFC2217
<b>Connection to Network</b>	Ethernet 10BaseT / 100BaseTX
<b>Configuration Options</b>	Windows Utility, Web Interface

## Performance

	Industry leading Performance
	Throughput guaranteed minimum of 95% of theoretical bi-direction full duplex band width at 1 Mbaud
<b>Input</b>	CTS False to Transmitter stop: 3 characters max, 1.5 typical XOFF recieved to Transmitter stop: 3 characters max, 1.5 typical RS485 Autogating Turn around time: <1 bit time
<b>Isolation</b>	Power supply to Serial Port 2500V <sub>RMS</sub> , Power Supply to Ethernet 1500V <sub>RMS</sub> , Serial Port to Ethernet 2500V <sub>RMS</sub>

## Approvals

<b>Industry Approvals</b>	AEO (C-TPAT), WEEE, RoHS, METL, FCC Compliant, EMC: CE
<b>Microsoft Approvals</b>	Microsoft Certified Gold Partner
<b>Microsoft Signed Drivers</b>	Windows 8 32 bit & 64 bit Editions Windows 7 32 bit & 64 bit Editions Windows Server 2003 32 bit & 64 bit Editions Windows XP 32 bit & 64 bit editions



## Packing Information

<b>Packaging</b>	Installation CD including manual, Microsoft signed drivers & utilities
<b>Device</b>	Ethernet Industrial Iso 1xRS232/422/485
<b>Packaged Weight</b>	0.0209 kg, 0.05 pounds
<b>Packaged Dims</b>	114.5(l) x 22.6(w) x 99(h) mm
<b>GTIN Universal Code</b>	837324002898

## 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: <a href="mailto:sales@brainboxes.com">sales@brainboxes.com</a>

## Optional Accessory

**ORDER CODE - Global Power Supply - PW-600**

**ORDER CODE - USB Power Supply- PW-650**

