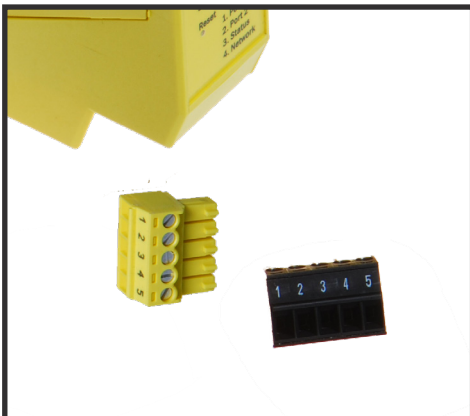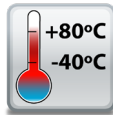# ES-522   Industrial Ethernet Serial

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
- -40˚C to +80˚C/-40℉ to +176℉ Temperature range

IP20

+80ºC -40ºC

2

RS232 & RS422/485

SCREW

DIN

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

ES-522

Industrial Ethernet to Serial

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

Easy Wire Removable screw terminal blocks

2 Port Serial Software selectable as RS232/422/485

Integral DIN rail clip with earth

-40ºC to +80ºC/-40ºF to +176ºF temperature range

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

Ethernet Port

LED status indication

IP20 Non-conducting polyamide case with vents

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

Connectors

Screw Terminals	3.5mm pitch, #22 - #14, 0.5mm^2-2.5mm^2 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

Environmental

Operating Temperature	-40°C to +80°C / -40ºF to +176ºF
Storage Temperature	-40°C to +85°C / -40ºF to +185ºF
Ambient Relative Humidity	5 to 95% (non-condensing)

Magjack LED Information

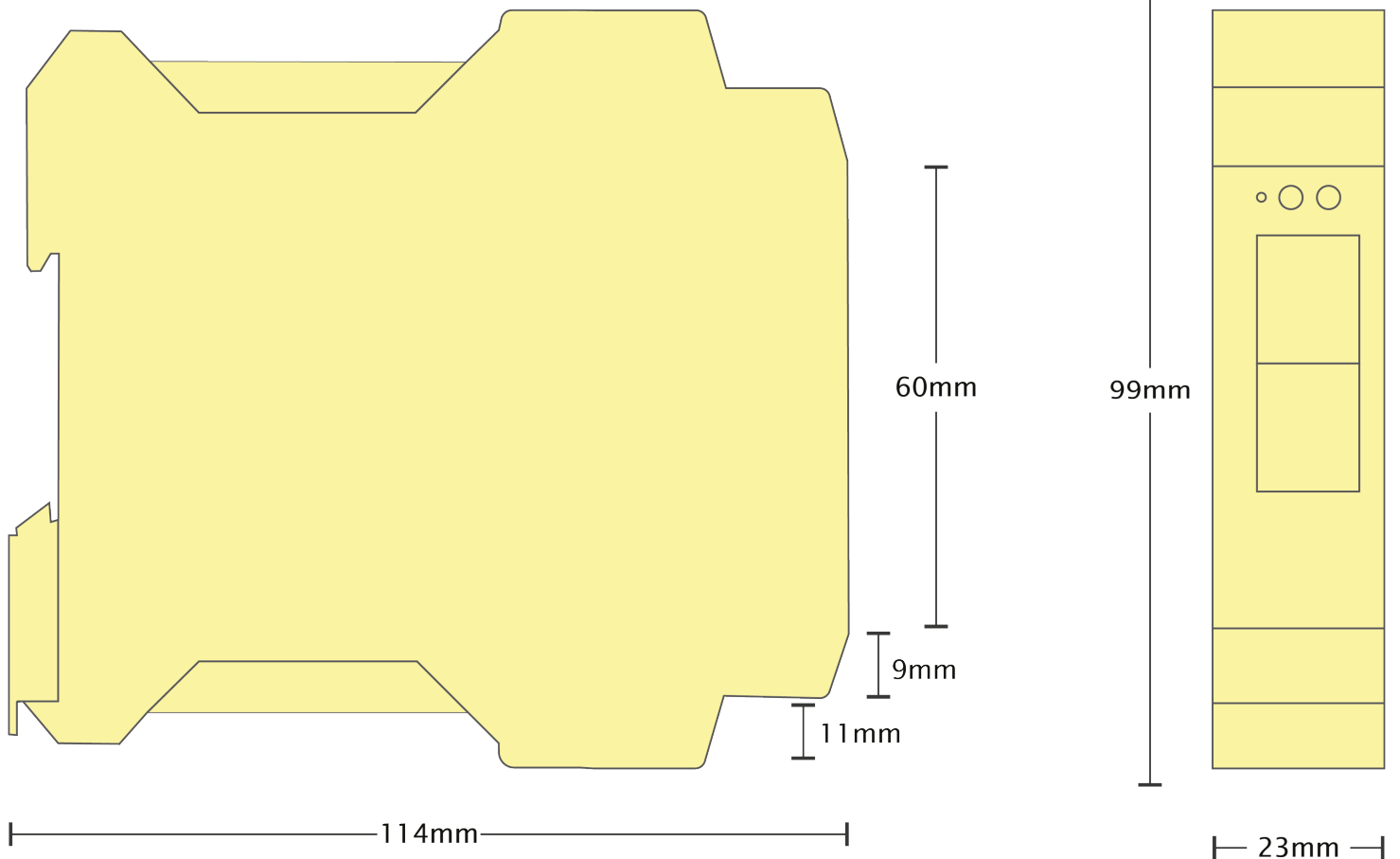|		
Status LED	Green	Device Ready
	Flashing Yellow	Changing Settings
	Flashing between Red & Green	Querying IP
	Flashing Green/Red	User performing Hard Reset
	Flashing between Green & Red/Yellow	IP address diagnostic
	Flashing between Green & Yellow	Initialization diagnostic
Serial Port LEDs	Green light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

Ethernet

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

ES-522 — Industrial Ethernet to Serial

Housing	IP-20 rated non-conducting polyamide case

60mm

99mm

9mm

11mm

114mm

23mm

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: recievers are $1/8^{th}$ 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 resister 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

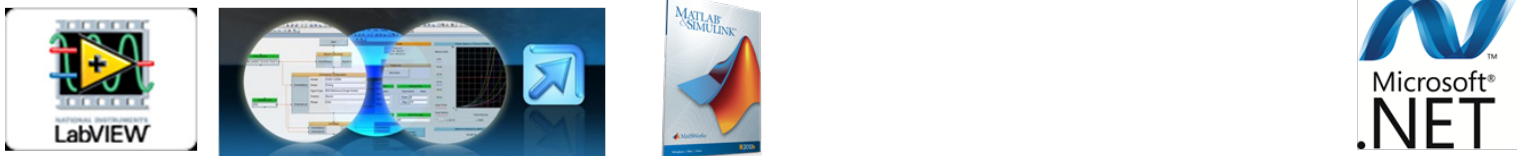|	
OS Compatibility	Brainboxes' software provides a TCP or Serial COM port interface. All software versions and updates available to download from our website.
Microsoft	Legacy COM port drivers for Microsoft OS up to latest Windows 11
Other	TCP and web browser interface for other OSs & Linux, e.g. Android, 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

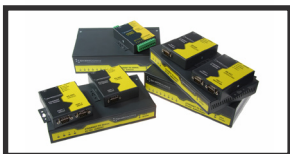|	
Packaging	Microsoft signed drivers & utilities, Quick Start Guide, Device
Packaged Weight	0.206 kg, 7.27 ounces
Packaged Dims	160x135x49 mm, 6.3x5.3x1.9 inches
GTIN Universal Code	837324002614

Approvals

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

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

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.