USB Strain Gauge or Load Cell Digitiser Module

Features

- Quick and easy connectivity via USB
- MODBUS RTU and ASCII protocols available
- Digital I/O
- High speed to 500 readings/second
- Real mV/V calibration
- Peak & trough recordings

Introduction

The DSCUSB is a compact, high performance digital signal conditioner with USB connectivity aimed at applications which require high-accuracy measurement repeatability. An option of a rugged metal enclosure makes the device suitable for all environments. Simply by plugging the device into a PC, data can be extracted from most strain gauge bridge input sensors and acquired by software which allows data manipulation.

No additional power supply is required. Although ideal for 1 to 1 interface the device can connect with multiple sensors with the use of a suitable hub. A choice of MODBUS RTU or ASCII protocols at industrial stability are currently available.

Specifications

Hardware Specifications

Parameter	Min	Typical	Max	Units	Notes
Supply Voltage Range	4.35	5	5.25	Volts	
Stand-by Current	-	100	500	uA	
Average Operational Current (normal mode)	-	70	80	mA	Note 1
Operating Temperature Range	-40	-	85	Deg C	
Storage Temperature Range	-40	-	85	Deg C	
Humidity	0		95		%RH

Notes: 1. When connected to a 350 Ohm Load Cell.

Bridge Measurement

Measurement	Min	Typical	Max	Units
Strain Gauge Excitation System			4 wire	
Strain Gauge Excitation Voltage	4. 5	5	5.25	VDC
Strain Gauge Drive Capability	80	-	5000	Ohms
Strain Gauge Sensitivity	-3	2.5	3	mV/V
Offset Temperature Stability		5	10	ppm/C
Gain Temperature Stability		30	50	ppm/C
Offset Stability with Time		35	160	ppm of FR (1)
Gain Stability with Time			300	ppm of FR (2)
Non Linearity before Linearization		5	25	ppm of FR
Internal Resolution		16 Million		Counts / Divs
Resolution @ 1Hz Readings (Noise Stable) over 100s		66,000		Counts / Divs
Resolution @ 10Hz Readings (Noise Stable) over 100s		40,000		Counts / Divs
Resolution @ 100Hz Readings (Noise Stable) over 100s		10,000		Counts / Divs
Signal Filter	Dynamic recursive type user programmable			

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Communications (USB)

The Load Cell to USB Adaptor will communicate as a simple serial device rather than a 'native' USB device.
Once the device is plugged into a PC and the supplied drivers are installed, the device will appear as a Virtual Serial Port to the PC.
Standard Modbus drivers, configurations and libraries can be used with this device. Mantracourt will also supply a driver for its own 'Instrument Explorer' software.
Because each device, when plugged into a PC, creates an additional serial port, the total number of devices that can be attached to the PC may be limited by the communication software's ability to utilise these multiple ports i.e. an existing Modbus communication program may only support COM1 to COM4.

Support Modules

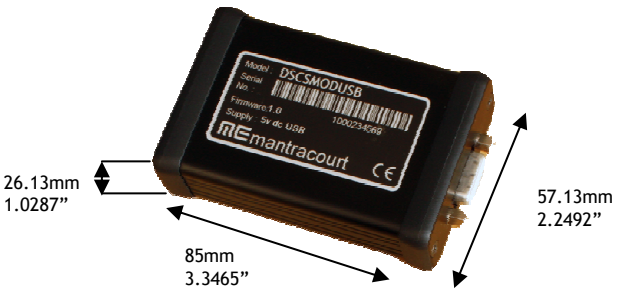
Instrument Explorer Software

Product Order Codes

DSCSUASC	Industrial Stability USB with ASCII protocol
DSCSUEASC	USB Industrial Digitiser ASCII protocol with enclosure
DSCSUMOD	Industrial Stability USB with Modbus protocol
DSCSUEMOD	USB Industrial Digitiser Modbus protocol with enclosure
DSJ2	Junction PCB with Field Connectivity for DSCUXXX

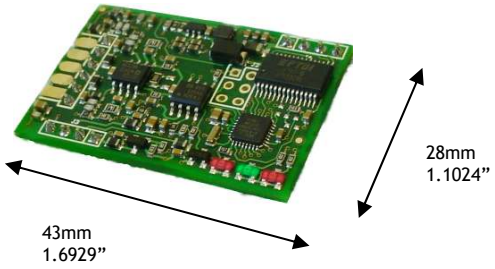
Mechanical Dimensions

DSCSUEXXX



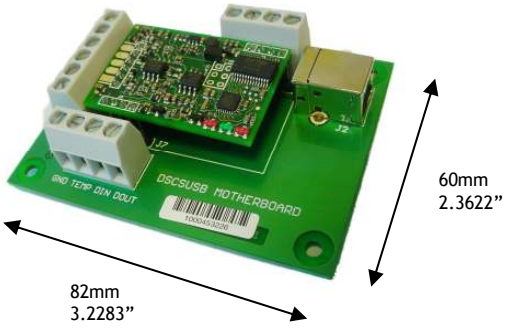
Cased 85 x 57.13 x 26.13mm (3.3465 x 2.2492 x 1.0287 inches) excluding connectors, with USB cable length 136 cm (4.462 feet)
Case material: Extruded Aluminum 6063
Bezels: Polycarbonate

DSCUXXX



PCB 43 x 28 x 12mm (1.6929 x 1.1024 x 0.4724 inches)

DSJ2 - Field Connectivity Module (Photograph shows DSCUSB fitted to DSJ2)



Junction PCB 82 x 60 x 20mm (3.2283 x 2.3622 x 0.7874 inches)

CE & Environmental

Storage temperature	- 40 to + 85ºC
Operating temperature	- 40 to + 85ºC
Relative humidity	95% maximum non condensing
Safety/Low Voltage Directive	73/23/EEC amended by 93/68/EEC BS EN 61010-1:2001, IEC 1010-1-1990
EMC Directive	89/336/EEC Basic Standard BS EN 61326:1998

EMC Emissions	BS EN 55011:2007
EMC Immunity	BS EN 61000-42002 BS EN 61000-4-4:2004 BS EN 61000-4-11:2004:1995 BS EN 61000-4-3:2

CE

In the interests of continued product development, Mantracourt Electronics Limited reserves the right to alter product specifications without prior notice

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