

## TYPE: DSC



# DSC Digital Strain Gauge to Data Converter

## Description

The DSC is a high performance digital signal conditioner with a host of additional features for the precision measurement of strain gauge based transducers. The DSC is available with an RS485 or RS232 output format, making it suitable for 'one-to-one' or multi drop systems.

Including the DSC into load cell based applications enables the building of very high accuracy load cells, using the built in linearisation and temperature compensation facilities. The DSJ1 single channel junction box and the DSJ4 four channel junction box are available to assist with simple on-site installation and commissioning.

LCM Systems can also supply PC based software packages, specially written to interface with DSC based load cells and pressure transducers. Please contact our technical department to discuss your requirements.

## Specification

| DSCH High Stability                       | Min  | Typ        | Max    |
|---|------|------------|--------|
| Bridge excitation (Ohms)                  | 4.25 | 5          | 5.25   |
| Bridge impedance (Ohms)                   | 320  | 350        | 5000   |
| Sensor impedance: 18V supply (Ohms) *     | 320  | 350        | 5000   |
| Sensor impedance: 12V supply (Ohms) *     | 120  | 350        | 5000   |
| Bridge sensitivity (mV/V)                 | -3   |            | +3     |
| Offset temperature stability (ppm/°C)     |      | 1          | 4      |
| Gain temperature stability (ppm/°C)       |      | 3          | 5      |
| Offset stability with time (%FR)          |      | 0.002      | 0.008  |
| Gain stability with time (ppmFR/1st year) |      |            | 30     |
| Non linearity (%FR)                       |      | 0.0005     | 0.0025 |
| Internal Resolution (counts/divisions)    |      | 16 million |        |
| Resolution @ 1Hz (noise stable)           |      | 200,000    |        |
| Resolution @ 10Hz (noise stable)          |      | 120,000    |        |
| Resolution @ 100Hz (noise stable)         |      | 50,000     |        |
| Resolution @ 500Hz (noise stable)         |      | 18,000     |        |

| DSCS Industrial Stability                 | Min  | Typ        | Max    |
|---|------|------------|--------|
| Bridge excitation (Ohms)                  | 4.25 | 5          | 5.25   |
| Bridge impedance (Ohms)                   | 320  | 350        | 5000   |
| Sensor impedance: 18V supply (Ohms) *     | 320  | 350        | 5000   |
| Sensor impedance: 12V supply (Ohms) *     | 120  | 350        | 5000   |
| Bridge sensitivity (mV/V)                 | -3   |            | +3     |
| Offset temperature stability (ppm/°C)     |      | 5          | 10     |
| Gain temperature stability (ppm/°C)       |      | 30         | 50     |
| Offset stability with time (%FR)          |      | 0.0035     | 0.016  |
| Gain stability with time (ppmFR/1st year) |      |            | 300    |
| Non linearity (%FR)                       |      | 0.0005     | 0.0025 |
| Internal Resolution (counts/divisions)    |      | 16 million |        |
| Resolution @ 1Hz (noise stable)           |      | 66,000     |        |
| Resolution @ 10Hz (noise stable)          |      | 40,000     |        |
| Resolution @ 100Hz (noise stable)         |      | 10,000     |        |
| Resolution @ 500Hz (noise stable)         |      | 5,000      |        |

\* Subject to supply voltage (see electrical specifications)

## Available Options

- Temperature Measurement Resolution (0.1°C) & Temperature Measurement Accuracy (1°C)

## Features

- RS485 and RS232 versions available
- Baud rates to 230K
- High speed to 500 readings/second
- ±15KV ESD protected
- Real mV/V calibration
- Noise immunity 5 x heavy industrial level
- Diagnostics LED
- Remote shunt calibration
- Very high stability
- Peak and trough recording
- Programmable dynamic filtering

## Typical Applications

- High accuracy aircraft weighing
- Crane weighing using LDD-LITE large digit display
- Centre of gravity PC based systems
- Condition and safety monitoring systems

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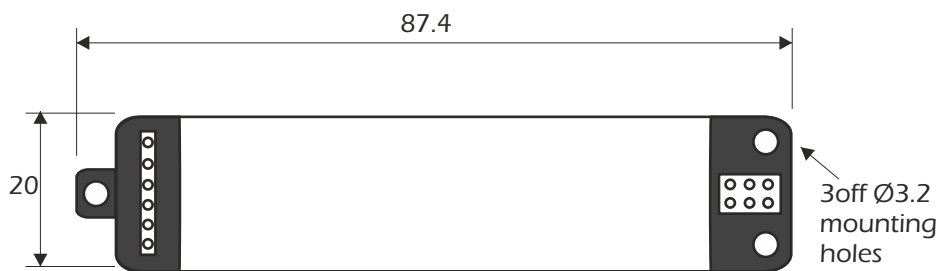
# DSC Digital Strain Gauge to Data Converter

## Specification (continued)

|  |                                 |
|--|---------------------------------|
| Power supply voltage (Vdc)             | 5.6 to 18 (12 typical)          |
| Power supply noise/ripple (mVac pk-pk) | 100                             |
| Supply current - 350R Bridge (mA)      | 45 to 60                        |
| Power@ 10V supply - 350R bridge (mW)   | 350                             |
| Excitation system                      | 4 wire                          |
| RS485/RS232 data rate (Baud)           | 2400 min, 230,000 max           |
| Protocols                              | ASCII, MantraBUS II, Modbus RTU |
| Storage temperature                    | -40 to +85°C                    |
| Operating temperature                  | -40 to +85°C                    |
| Relative humidity                      | 95% maximum non-condensing      |
| European EMC Directive                 | 2004/108/EC                     |
| Low Voltage Directive                  | 2006/95/EC                      |



## Dimensions



All dimensions are in mm

## Product Order Codes

|                                   |                    |          |
|-----------------------------------|--------------------|----------|
| <b>High Stability RS232</b>       | ASCII Protocol     | DSCH2ASC |
|                                   | MantraBUS Protocol | DSCH2MAN |
|                                   | MODBUS Protocol    | DSCH2MOD |
| <b>High Stability RS485</b>       | ASCII Protocol     | DSCH4ASC |
|                                   | MantraBUS Protocol | DSCH4MAN |
|                                   | MODBUS Protocol    | DSCH4MOD |
| <b>Industrial Stability RS232</b> | ASCII Protocol     | DSCS2ASC |
|                                   | MantraBUS Protocol | DSCS2MAN |
|                                   | MODBUS Protocol    | DSCS2MOD |
| <b>Industrial Stability RS485</b> | ASCII Protocol     | DSCS4ASC |
|                                   | MantraBUS Protocol | DSCS4MAN |
|                                   | MODBUS Protocol    | DSCS4MOD |

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Due to continual product development, LCM Systems Ltd reserves the right to alter product specifications without prior notice.

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APPROVED

(unapproved if printed)