

Strain Gauge or Load Cell Embedded Digitiser Module

Features

- New Generation Extremely High Performance & Low Cost
- High speed to 300 Readings/Sec
- Low cost
- Real mV/V calibration
- Extreme Noise Immunity 5 x heavy industrial level
- Transducer Calibration
- Remote Shunt Calibration
- Very high stability (*Capable of 6000 Divisions OIML*)
- Peak and Trough Recording
- Programmable dynamic filter
- Wide operating voltage (5.4V - 18V)



- DC Excitation for longer cable lengths
- Diagnostics LED

Introduction

The 2nd Generation DCell & DSC is a high performance digital signal conditioner with a host of additional features for the precision measurement of strain gauge transducers. The DCell is a Micro Miniature PCB is designed to fit inside the majority of sensors.

The DSC card style unit is designed to be mounted along side the majority of sensors, providing a 'digital' load cell with the benefit of very high stability and a CAN output.

Standard Characteristics

- System Calibration
- Transducer Calibration
- Self Diagnostics
- Sensor Operation Limit Alarms
- Reverse Polarity Protected
- Fieldbus Compatibility
- High Performance
- Continuous Auto Zero Operation
- RS485 Communication
- 3 Year Manufacturers Warranty
- Full CE Approval
- Capable of ATEX Approval

Options

- Temperature Compensation via external sensor
- Alternative Sensitivities (1-20mV/V)
- IP65 / NEMA 4 Enclosure with screw termination (see DSJ1)

Specifications

Product Description	DSCH High Stability			DSCS Industrial Stability			Units
	Min	Typ	Max	Min	Typ	Max	
Bridge Excitation	4.5	5	5.25	4.5	5	5.25	VDC
Bridge Impedance	320	350	5,000	320	350	5,000	Ohms
Sensor Impedance up to 18v Supply	320	350	5,000	320	350	5,000	Ohms Δ
Sensor Impedance up to 12v Supply	120	350	5,000	120	350	5,000	Ohms Δ
Bridge Sensitivity	-3		+3	-3		+3	mV/V
Offset Temperature Stability		1	4		5	10	ppm/C
Gain Temperature Stability		3	5		30	50	ppm/C
Offset Stability with Time		0.002	0.008		0.0035	0.016	%FR ·
Gain Stability with Time			30			300	ppm of FR /1 st Year
Non Linearity		0.0005	0.0025		0.0005	0.0025	% FR
Internal Resolution		16 Million			16 Million		Counts/Divisions
Resolution @ 1Hz (Noise Stable) ●		200,000			66,000		Counts/Divisions
Resolution @ 10Hz (Noise Stable) ●		120,000			40,000		Counts/Divisions
Resolution @ 100Hz (Noise Stable) ●		50,000			10,000		Counts/Divisions
Resolution @ 500Hz (Noise Stable) ●		18,000			5,000		Counts/Divisions
Optional							
Temperature Measurement Resolution		0.1					°C
Temperature Measurement Accuracy		1					°C

Notes: · From original offset at any time. ● Stability over 100 second period. Δ Subject to supply voltage. See Electrical Specification overleaf.

Electrical

Power Supply Voltage	5.4	12	18	5.4	12	18	V dc
Power Supply Noise/Ripple			100			100	mV ac pk-pk
Power Supply Current (350R Bridge)		45	60		45	60	mA
Power @ 10V Supply (350R Bridge)		350			350		mW
Sensor Impedance up to 18v Supply	320	350	5,000	320	350	5,000	ohms
Sensor Impedance up to 12v Supply	120	350	5,000	120	350	5,000	ohms
Excitation System		4 wire			4 wire		
Environmental							
Operating temperature range	-40		85	-40		85	°C
Operating temperature range for OIML 6000d	-10		55				°C
Storage temperature	-40		85	-40		85	°C
Humidity	0		95	0		95	%RH Non Condensing
Communications							
RS485 Data Rate	2,400		230k	2,400		230k	Baud
CAN Bit Rate	10K		1M	10K		1M	Bits/Sec

Note: Update speeds are selectable to 1, 2, 5, 10, 20, 50, 60, 100, 200, 300, 500 Samples/Sec

The benefits to the transducer user/system supplier

Mantracourt has identified the following points which demonstrate how strain gauge transducers users will benefit.

1. Plug-in-and-go-sensor

No need for a separate instrument, DSC provides a direct output in engineering units from a standard Strain Gauge, - *save cost and space.*

2. Simple to use

The Strain Gauge manufacturer can supply the sensor pre-calibrated for system offset, gain, hysteresis and scale parameters.

3. Outstanding performance to cost ratio

19 bit (500,000 divisions) and 0.001% noise immunity ideal for high precision process weighing applications such as batching, at a fraction of the cost of many instrument solutions

4. Low cost of Strain Gauge ownership

Use with low cost 2 pair twisted cabling - *reduce set-up costs.*

- Digital storage of calibration details, means the system will not need regular re-calibration - *save maintenance costs.*

- In-service replacement of a faulty/damaged Strain Gauge is possible by simply downloading the stored calibration details to a new cell. *Save maintenance time and cost by not having to empty a vessel and re-apply test weights.*

5. Universal systems compatibility

Fieldbus connectivity ensures interoperability with existing/future process control equipment

6. Non-expert maintenance

Self diagnostics alerts user to common Strain Gauge faults such as over-range.

Support Modules

Instrument Explorer Software	DCell Evaluation Kits
VisualLink & VisualLink lite free PC software	1XXAT USB - CAN Convertor

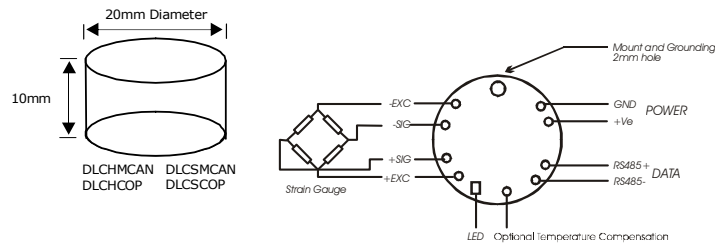
Product Order Codes

DCell High Stability	Prod Code	DSC High Stability	Prod Code	DCell Industrial Stability	Prod Code	DSC Industrial Stability	Prod Code
CANopen Protocol	DLCHCOP	CAN open Protocol	DSCHCOP	CANopen Protocol	DLCSROP	CAN open Protocol	DSCCOP
MantraCAN Protocol	DLCHMCAN	MantraCAN Protocol	DSCMCMAN	MantraCAN Protocol	DLCSMAN	MantraCAN Protocol	DSCMCAN

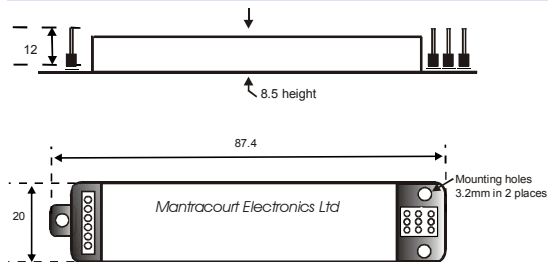
CE & Environmental

Storage temperature	-20 to +70°C	EMC Emissions	BS EN 55011:1998
Operating temperature	-10 to 50°C	EMC Immunity	BS EN 61000-4-3:2002
Relative humidity	95% maximum non condensing		BS EN 61000-4-4:2004
Safety/Low Voltage Directive	73/23/EEC amended by 93/68/EEC		BS EN 61000-4-11:2004
EMC Directive	BS EN 61010-1:2001, IEC 1010-1-1990		
	89/336/EEC		
	Basic Standard BS EN 61326:1998		

DCell Mechanical Dimensions & Connections



DSC Mechanical Dimensions & Connections



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

