DSC Digital Strain Gauge to Data Converter

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New Generation Extremely High Performance

Introduction

The 2nd Generation DSC is a high performance digital signal conditioner, with a host of additional features for the precision measurement of strain gauge transducers. The 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 RS485 or RS232 output.

Additional New Features

- Baud rates to 230, 400
- High speed to 500 Readings/Sec
- Low cost
- ±15KV ESD protected
- 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
- Compatible with previous Version 2 DSC
- Programmable dynamic filter
- Wide operating voltage *(5.4V – 18V)*
- DC Excitation for longer cable lengths
- Diagnostics LED

Standard Characteristics

- System Calibration
- Transducer Calibration
- Self Diagnostics
- Sensor Operation Limit Alarms
- Reverse Polarity Protected
- Fieldbus Compatibility
- High Performance
- Continuous Auto Zero Operation
- RS485 or RS232 Communication available
- 3 Year Manufacturers Warranty
- Full CE Approval
- Capable of ATEX Approval

Options

- Temperature Compensation via external sensor
- OEM Application software through Bootloader, allowing special functions to be programmed via RS485/232
- RS232-RS485 Converter (Product Sheet 66)
- Alternative Sensitivities (1-20mV/V)
- IP65 / NEMA 4 Enclosure with screw termination (DSJ1 Product Sheet 43)

Specifications

Product		**DSCH High Stability**			**DSCS Industrial Stability**			
Description	**MIN**	**TYP**	**MAX**	**MIN**	**TYP**	**MAX**	**UNITS**
Bridge Excitation	4.5	5	5.25	4.5	5	5.25	VDC
Bridge Impedance	320	350	5,000	320	350	5,000	Ohms
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 /1st Year
Non Linearity		0.0005	0.0025		0.0005	0.0025	% FR
Internal Resolution		16 Million			16 Million		Counts/Divisions
Resolution @ 1Hz (Noise Stable) ☞		400,000			100,000		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					ºC
Temperature Measurement Accuracy		1					ºC

Notes:
☞ From original offset at any time.
☞☞ Stability over 100 second period.

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							
RS485/232 Data Rate	2,400		230,400	2,400		230,400	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 down loading 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.

Protocols

Available Now	Available Shortly – Ask for Details
ASCII	CAN
MANTRABUS	CANOpen
MODBUS	Profibus

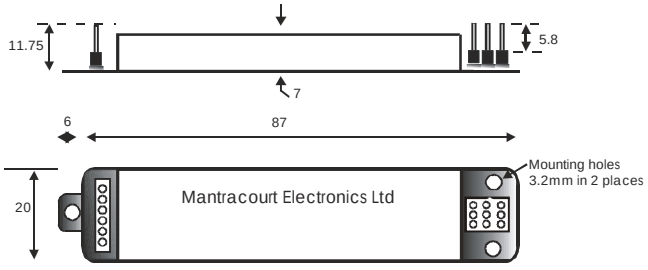
Support Modules

VisualLink & VisualLink lite free PC software	DSC Evaluation Kits
RS232 - RS485 Converter (Product Sheet 66)	DSJ1 IP65 Enclosure with Field Terminals

Product Order Codes

High Stability RS232		**Industrial Stability RS232**	
ASCII Protocol	**DSCH2ASC**	ASCII Protocol	**DSCS2ASC**
MANTRABUS Protocol	**DSCH2MAN**	MANTRABUS Protocol	**DSCS2MAN**
MODBUS Protocol	**DSCH2MOD**	MODBUS Protocol	**DSCS2MOD**
High Stability RS485		**Industrial Stability RS485**	
ASCII Protocol	**DSCH4ASC**	ASCII Protocol	**DSCS4ASC**
MANTRABUS Protocol	**DSCH4MAN**	MANTRABUS Protocol	**DSCS4MAN**
MODBUS Protocol	**DSCH4MOD**	MODBUS Protocol	**DSCS4MOD**
High Stability CAN		**Industrial Stability CAN**	
CANOpen Protocol	**DSCHCOP**	CANOpen Protocol	**DSCSCOP**

Mechanical Details:



CE & Environmental Approvals

EMC Directive 89/336/EEC

EMC Emissions

EN 50 081-1 :1992 (Light Industrial)

EN 50 081-2 :1992 (Heavy Industrial)

EMC Immunity

EN 50 082-1 :1992 (Light Industrial)

EN 50 082-2 :1992 (Heavy Industrial)

Low Voltage Directive 73/23/EEC amended by 93/68/EEC

IEC 1010-1 :1990

BSEN 610101 :1993