



## EL20-S458

### Seat belt load cell

#### SPECIFICATIONS

- Ranges from 5 to 25 kN
- Ultra rugged low-mass titanium design
- Seat belt restraint testing
- Tension only
- Replaceable cable

Measurement Specialties has applied our decade of experience serving the automotive crash test industry to design the ultimate crash test seat belt restraint sensor.

The EL20-S458 provides a super low mass titanium structure to minimize  $F=MA$  errors during the crash event. All exterior surfaces are smoothed to prevent snagging on dummy or air bag materials; smoothed exterior profiles protect your expensive crash test dummy from damage while reducing drag and frictional error. The EL20-S458 is offered with optional ultra low mass slotted titanium axles and robust armoured cable exit from the device. The user-replaceable cable ensures that even if your cabling is damaged, replacement cables can be rapidly wired and your test facility remains in full operation at all times.

The low noise Wheatstone bridge consists of metal foil strain gages which provide full scale outputs of typically 2 mV/V of excitation. The EL20-S458 is also available with internal linearization (Option B) to provide +/- 0.5% FS maximum non-linearity. Option D provides linearization and high level output of 0.5 to 4.5 V. The EL20-S458 can be configured with a variety of options to fine tune the instrument to your application: select from several standard compensated temperature ranges, slotted or knurled axles, input voltages, lead lengths or specify unique combinations of these options.

The EL20-S458 belt tension load cell can be fine-tuned to meet your crash test or military test needs.

#### FEATURES

- Super low mass titanium design
- Ultra low mass slotted titanium axles available
- Low noise
- Optional linearized high level output

#### APPLICATIONS

- Automotive crash test
- Military payload delivery
- Sport and military parachute tether loads
- Automatic reserve chute deployment systems

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### STANDARD RANGES

Ranges in kN	5	16	25
Ranges in klbf	1	3.2	5
Over range	2x	x1.5	X1.5

### PERFORMANCE SPECIFICATIONS

All values are typical at temperature 20±1° C

PARAMETERS	
Operating Temperature Range (OTR)	-40 to 120° C [-4 to 176° F]
Compensated Temperature Range (CTR)	0 to 60° C [32 to 140° F]
Zero Shift in CTR	<1% F.S. /50° C [100° F]
Sensitivity Shift in CTR	<1% of reading / 50° C [100° F]
Range (F.S.)	0-5 to 0-25 kN [0-1 to 0-5 klbf]
Weight	85 gr
<b>Over-Range</b>	
Without Damage	1.5 x F.S. (2x for the model 5 kN range)
Without Destruction	3 x F.S.
<b>Accuracy</b>	
Non-linearity without option	≤±3% F.S.
Non-linearity with option B or D	≤±0.5% F.S.

### Electrical Characteristics

Model	EL20-S458	EL20-S458-x/B	EL20-S458-x/D
Supply Voltage	10Vdc	10Vdc	10Vdc
F.S. Output (5kN model)	1.5mV/V	1.5mV/V	4V ±5% F.S.
F.S. Output (>5kN model )	2mV/V	2mV/V	4V ±5% F.S.
Zero Offset	±2% F.S.	±2% F.S.	0.5V ±5% F.S.
Input Impedance/Consumption	350 Ω	<30mA	<30mA
Output Impedance	350 Ω	350 Ω	<1KΩ
Insulation under 50Vdc	≥100MΩ	≥100MΩ	≥100MΩ

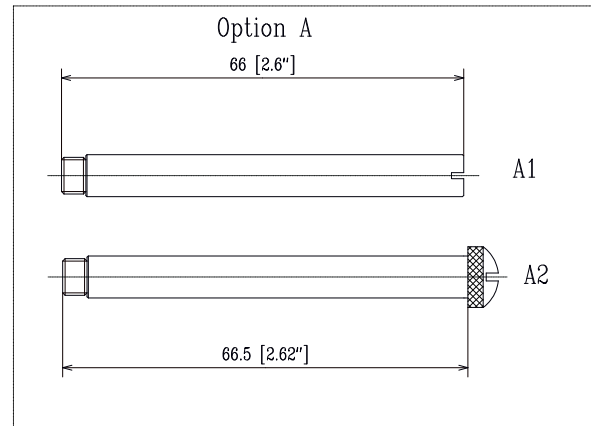
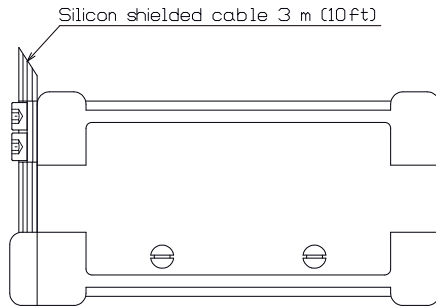
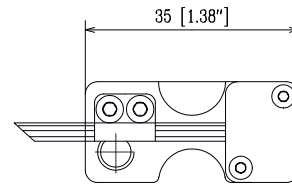
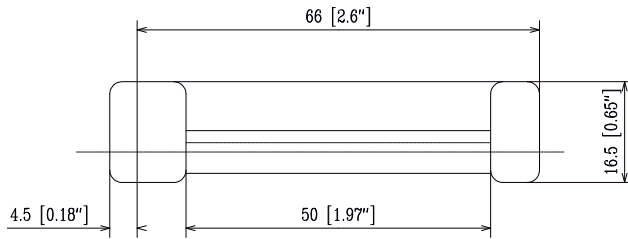
### Notes

1. Electrical Termination: 3m shielded cable length
2. Material: titanium.
3. Protection Index: IP50
4. CE conformance according to EN 61010-1, EN 50081-1, EN 50082-1

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## DIMENSIONS



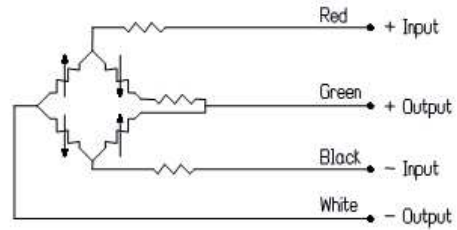
## INSTALLATION



## CONNECTIONS

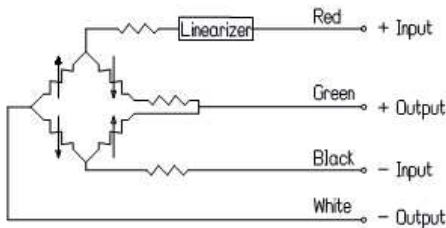
Standard

FSD (5KN): 1.5mV/V      Electrical in : 350 Ohms nom.  
 FSD (16KN): 2mV/V      Electrical out : 350 Ohms nom.  
 NL : <math>\pm 3\%FSD</math>



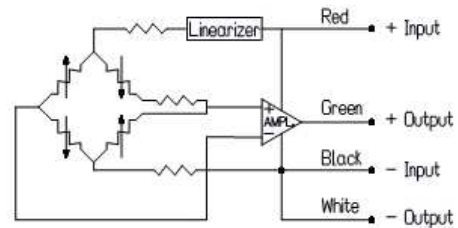
OPTION B

FSD (5KN): 1.5mV/V      Electrical in : 30mA max.  
 FSD (16KN): 2mV/V      Electrical out : 350 Ohms nom.  
 NL : <math>\pm 0.5\%FSD</math>



OPTION D

FSD : 0.5 to 4.5V      Electrical in : 30 mA max.  
 NL : <math>\pm 0.5\%FSD</math>      Electrical out : short circuit protected



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### OPTIONS AND ACCESSORIES

<b>A1:</b> Flush, low mass titanium axle
<b>A2:</b> Hand grip, knurled titanium axle (standard).
<b>B:</b> Linearized (unamplified) output (NL : $\pm 0.5\%$ FS).
<b>D:</b> Linearized (NL: $\pm 0.5\%$ FS) high level output 0.5 to 4.5 V $\pm 5\%$ span trim.
<b>Z0:</b> Compensated temperature range -40 to 20°C
<b>Z1:</b> Compensated temperature range -20 to 40°C
<b>V0:</b> Replace "0" with excitation between 2 to 9Vdc; Excitation 5Vdc minimum for option /B or /D
<b>L00M:</b> Special Cable Length, replace "00" with total length in meter
<b>CL7x:</b> Wiring of Lemo FGG-1B-307 at cable end
<b>CD7x:</b> Wiring of Lemo FDG-1B-307 and Dallas DS2401 at cable end
<b>CC:</b> Wiring of connector to be supplied by customer according to wiring diagram
<b>SL1:</b> Sleeve adapter for 38/42 mm (1.5 /1.65 ) strap width.
<b>SL2:</b> Sleeve adapter for 28/32 mm (1.1 /1.26 ) strap width.
<b>SL3:</b> Sleeve adapter for 24/28 mm (0.95 /1.1 ) strap width.

### ORDERING INFORMATION

