



APPLIED MEASUREMENTS LTD.
Transducer Specialists...

DDEN Submersible Miniature In-Line Load Cell

Key Features:

- 용량 0-50N ~ 0-50kN
- 완전 방수: IP68 ~ 10m
- 인장 및 압축
- 출력: 0.5mV/V ~ 2mV/V
- 정확도: $< \pm 0.15\% / RC$ (0.05% 일반)
- 선택적 증폭 출력: 4-20mA, 0.1-10Vdc, 0.1-5Vdc, $\pm 10Vdc$, $\pm 5Vdc$
- RS485 디지털 출력 옵션: ASCII, Modbus, CAN, CAN오픈
- 로우 프로파일 및 초소형
- 인라인 마운팅을 위한 일체형 수나사
- 높은 고유 주파수
- 낮은 처짐
- 견고한 구조



Low Profile Fully Submersible Load Cell for use in Tension and Compression

수중 인라인 로드셀의 DDEN 시리즈는 인장 및 압축 모두에 사용하도록 설계되었습니다. 'O' 링으로 IP68 환경 보호 등급으로 밀봉되어 표준으로 최대 10미터 깊이에서 무결성을 제공합니다. 더 깊은 깊이와 맞춤형 버전을 제공할 수 있습니다.

DDEN 완전 수중 로드셀은 수중 또는 습도가 높거나 침수 위험이 있는 지역에서 사용하도록 설계되었습니다. 현재 응용 프로그램에는 파도 탱크 측정 시스템 및 계류 부표 케이블 장력 모니터링이 포함됩니다. DDEN의 로우 프로파일 및 컴팩트 디자인은 s-빔 로드 셀과 같은 다른 인라인 로드 셀이 너무 큰 제한된 장착 공간이 있는 애플리케이션에서 사용할 수 있습니다. DDEN의 낮은 편향 및 높은 고유 진동수 결과는 재료 테스트 응용 프로그램 및 케이블 장력 모니터링 응용 프로그램에 적합합니다.

조정된 아날로그 출력 또는 디지털 출력이 필요한 경우 DDENA 변형을 제공합니다. DDENA는 ICA 시리즈 증폭기를 통합하여 0.1-10Vdc 또는 4-20mA와 같은 고수준 아날로그 출력 신호를 제공하거나 DCELL에 장착하여 ASCII, Modbus, CAN 또는 CANopen 프로토콜, RS485 출력을 제공할 수 있습니다.



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Options:

- Non-Standard Dimensions
- Higher Capacities to 1000kN/100te+
- Spherical Seating Rod End Bearings
- Female Adaptor Available on Request
- Compression Fittings Available
- Integral ICA Series Amplifiers
- Integral DCell RS485 Signal Digitiser
- USB Versions (via DSC-USB)
- TEDS (Transducer Electronic Data Sheet)
- TEDS Allows Plug & Play with TEDS Enabled Instrumentation
- Single or Multi-Channel PC-Based Monitoring & Data Logging System
- Wireless Version (via T24 instrumentation)
- Fatigue Rated Versions
- Marine & Seawater Compatible Versions

Applications:

- Materials Testing
- Cable Tension Monitoring
- Submersible Applications
- Locations with High Humidity
- Locations Susceptible to Flooding
- Marine Testing
- Hydrodynamic Testing

Wiring Diagram:

Wire	mV/V Output	3-Wire Voltage or Current Output	4-Wire Voltage Output	2-Wire Current	RS485 Digital
Red	+ve excitation	+ve supply	+ve supply	+ve supply	+5.4 to +18Vdc supply
Blue	-ve excitation	0V common	-ve supply	-ve supply / signal	-ve supply
White	+ve signal (tension)*	+ve signal	+ve signal	N/C	RS485 (B) Data -ve
Yellow	-ve signal	N/C	-ve signal	N/C	RS485 (A) Data +ve
Screen	To ground - not connected to load cell body				

* +ve signal in tension is standard, +ve signal in compression can also be offered.



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Specification:

Rated Capacity (RC)	N	0-50, 0-100, 0-250, 0-500, 0-1000, 0-2000, 0-5000, 0-10,000, 0-20,000, 0-50,000
Operating Modes	Tension/Compression / Tension & Compression	
Sensitivity (RO)	mV/V (nominal)	50N = 0.5 / 100N=1.0 / 250N = 0.75 / 500N = 1.5 / 1000N up = 2.0
Zero Balance/Offset	±%/Rated Output	<1.0
Output Symmetry (tension vs. compression)	±%/Rated Output	<0.25 typical
Non-Linearity	±%/Rated Output	<0.15 (0.05 typical)
Hysteresis	%/Rated Output	<0.15 (0.05 typical)
Repeatability	±%/Rated Output	<0.1
Temperature Effect on Zero	±%/Rated Output/ °C	<0.005
Temperature Effect on Sensitivity	±%/Applied Load/ °C	<0.005
Input Resistance	Ohms	700
Output Resistance	Ohms	700
Insulation Resistance	Megohms	>5000 @ 50Vdc
Excitation Voltage	Volts AC or DC	10 recommended (2-15 acceptable) - Note mV/V only, see page 5 for details of conditioned output versions.
Operating Temperature Range	°C	-20 to +80
Compensated Temperature Range	°C	0 to +70
Storage Temperature Range	°C	-20 to +80
Safe Overload	% of Rated Capacity	150
Ultimate Overload	% of Rated Capacity	200
Deflection @ Rated Capacity	mm	50N=0.08; 100N=0.12; 250N=0.09; 500N=0.06; 1000N=0.04; 2000N=0.03; 5000N=0.02; 10,000N=0.015; 20,000N=0.01; 50,000N=0.03
Fundamental Resonant Frequency*	kHz	50N=1.7; 100N=1.3; 250N=0.72; 500N=1.18; 1000N=2; 2000N=3.1; 5000N=6.1; 10,000N=9.9; 20,000N=18.2; 50,000N=13.3
IP Rating (Environmental Protection)		IP68 to 10m depth (please consult sales for greater depths)
Weight (excluding cable)	kg	50N to 20kN: 0.3kg / 50kN: 0.45kg,
Fatigue Life		10 ⁸ cycles typical (10 ⁹ cycles on fatigue-rated version)
Cable Length (as standard)	metres	2
Cable Type		4-core screened submersible, PUR (weight: 82g/m) sheath, Ø7.5
Construction Materials / Wetted Parts		17-4PH Stainless Steel, 303 Stainless Steel, PUR, TPE, Silicone
Resolution		1 part in 250,000 (with appropriate instrumentation)
Pressure Effect on Output		9N/mH ² O nominal
*The resonant frequency is calculated with the body of the load cell attached to a large plate, ensuring that only the sensing element oscillates: This is vital to achieve the highest natural frequency and subsequent frequency response.		



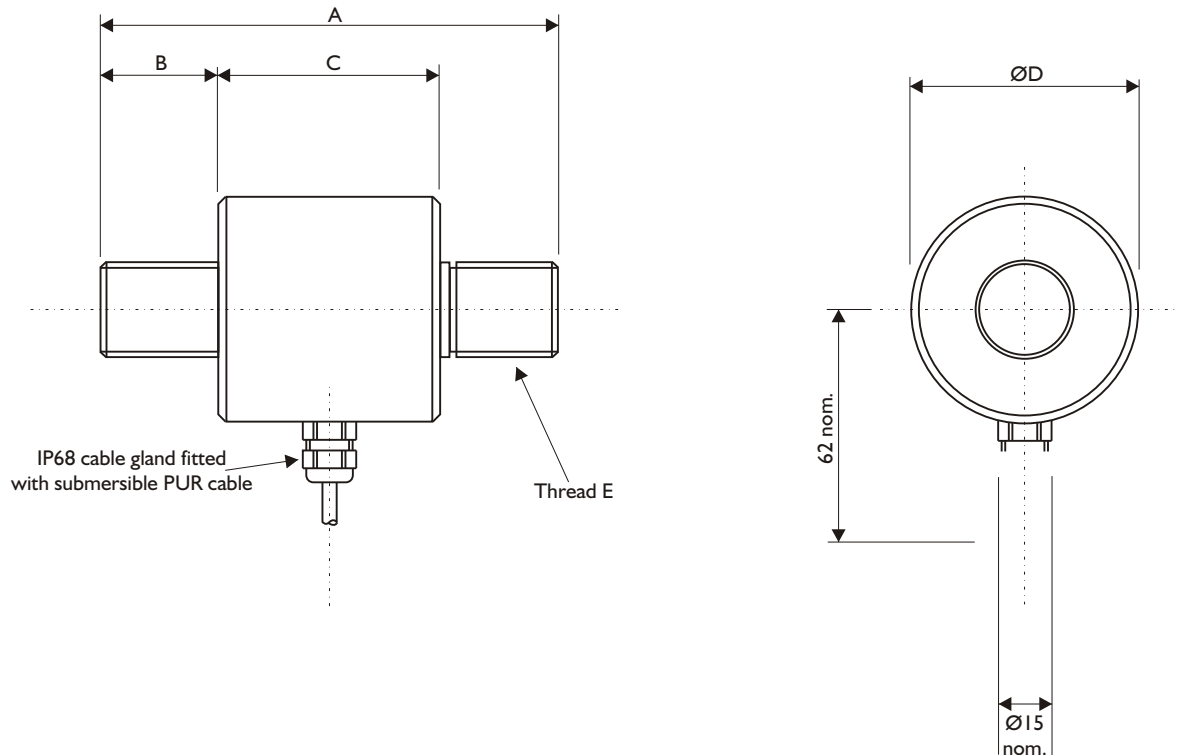
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Dimensions (mm):

MODEL	CAPACITY (N)	A	B	C	ØD	E
DDEN	0-50, 0-100, 0-250, 0-500, 0-1000, 0-2000, 0-5000, 0-10,000, 0-20,000	67	15	35	44	M12 x 1.75
DDEN	0-50,000	71	18	35	44	M16 x 2.0
DDENA	0-50, 0-100, 0-250, 0-500, 0-1000, 0-2000, 0-5000, 0-10,000, 0-20,000	67	15	35	44	M12 x 1.75
DDENA	0-50,000	71	17	37	50	M16 x 2.0

Note: Pressure effect on output will be 9N/mH O nominal



Ordering Codes:

Core Product	Capacity (inc Engineering Units)	Cable Length (m)	Specials Code	Example Result
DDEN	50N	002	000	DDEN-50N-002-000
DDEN	100N	002	000	DDEN-100N-002-000
DDEN	250N	002	000	DDEN-250N-002-000
DDEN	500N	002	000	DDEN-500N-002-000
DDEN	1000N	002	000	DDEN-1000N-002-000
DDEN	2000N	002	000	DDEN-2000N-002-000
DDEN	5000N	002	000	DDEN-5000N-002-000
DDEN	10kN	002	000	DDEN-10kN-002-000
DDEN	20kN	002	000	DDEN-20kN-002-000
DDEN	50kN	002	000	DDEN-50kN-002-000



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Core Product	Capacity (inc Engineering Units)	Cable Length (m)	Specials Code	Example Result
DDENAXX	50N	002	000	DDENAXX-50N-002-000
DDENAXX	100N	002	000	DDENAXX-100N-002-000
DDENAXX	250N	002	000	DDENAXX-250N-002-000
DDENAXX	500N	002	000	DDENAXX-500N-002-000
DDENAXX	1000N	002	000	DDENAXX-1000N-002-000
DDENAXX	2000N	002	000	DDENAXX-2000N-002-000
DDENAXX	5000N	002	000	DDENAXX-5000N-002-000
DDENAXX	10kN	002	000	DDENAXX-10kN-002-000
DDENAXX	20kN	002	000	DDENAXX-20kN-002-000
DDENAXX	50kN	002	000	DDENAXX-50kN-002-000

Note: XX is replaced by ICA amplifier code, i.e. 2H = ICA2H amplifier.

Available ICA amplifiers:	Output	Wiring Format + Supply Voltage	Amplifier Code
ICA1H	0.1 - 10Vdc	3 - wire / 13 - 30Vdc	1H
ICA2H	0.1 - 5Vdc	3 - wire / 8.5 - 28Vdc	2H
ICA3H	±10Vdc	3 - wire, bi-polar supply / ±13 to ±15Vdc	3H
ICA4H	4 - 20mA	3 - wire / 10 - 30Vdc	4H
ICA5S	4 - 20mA	2 - wire, loop-powered / 7.5 - 30Vdc	5S
ICA6H	±10Vdc	3 - wire, uni-polar supply / +14 to +18Vdc	6H
Available RS485 DCELL Digitisers:	Protocol	Wiring Format + Supply Voltage	Digitiser Code
DLCHASC	ASCII	2 power + 2 data / 5.4 - 18Vdc	ASC
DLCHMOD	Modbus	2 power + 2 data / 5.4 - 18Vdc	MOD
DLCHMCAN	CAN (MantraCAN)	2 power + 2 data / 5.4 - 18Vdc	CAN
DLCHCOP	CANopen	2 power + 2 data / 5.4 - 18Vdc	COP

Associated Products:



[TR150 Handheld Indicator](#)



[T24 Wireless Telemetry Range](#)



[Intuitive4-L Panel-Mount Indicator](#)



[DSC-USB USB Signal Digitiser](#)



[ICA Miniature Strain Gauge Amplifier](#)



[SGA Signal Conditioner/Amplifier](#)



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Mounting and Installation Accessories:

Helping You Get The Best Possible Performance From Your Load Cell.

Rod End Bearings for Tension Use

Designed to align forces through the principle axis of the load cell thus reducing the effects of extraneous forces, hence offering improved performance from the cell.

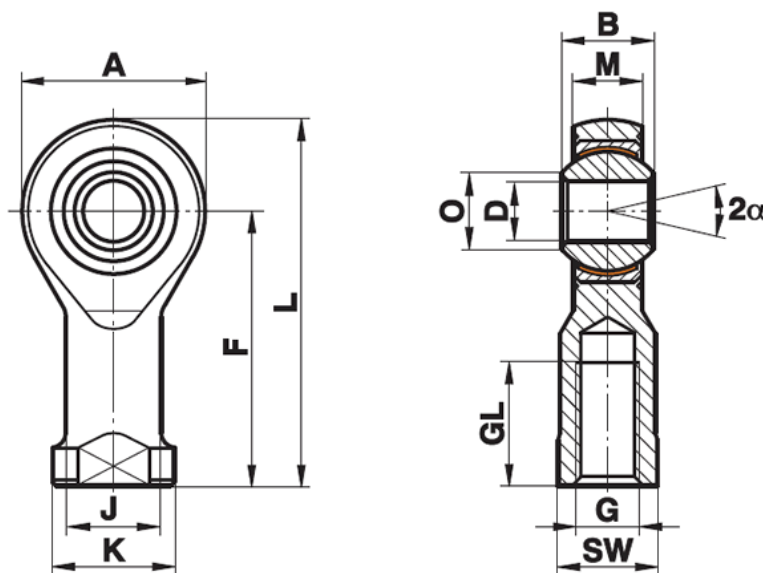
Rod End Bearings are used where tensile forces are being applied.

Maintenance-free rod ends are a complete units made up of a housing with both an integral shank (with an internal or external thread) and a maintenance-free spherical plain bearing, located within the housing.

Key Features:

- Supports radial loads in a tensile or compressive direction.
- Suitable for unilateral loads - can support alternating loads and alternating loads in combination with bearing GE.. UK-2RS, consult sales.
- Stainless Steel for corrosion resistance.
- Are maintenance-free.
- Fitted with radial spherical plain bearings.
- PTFE composite sliding contact surfaces.
- Enables compact adjacent construction thanks to its thin walled design of the eye housing.

Dimensions in mm:



LOAD CELL	ORDERING CODES	Size (D)	B	M	A	F	L	K	J	O	SW	G	GL	Static load C ₀ kN	Dynamic load C kN	Limiting Speed rev/min	Weight g
50N to 20kN	GIRSW-12RR-316	12	16	12.00	32	50	66	22.0	17.5	15.4	19	M12	22	34.5	32.0	300	115
DDEN-50kN	GIRSW-16RR-316	16	21	15.00	42	64	85	27.0	22.0	19.3	22	M16	28	60.5	52.5	230	230