DWS9S - String Potentiometer

Absolute Linear Position Feedback

Range: 0-14000mm

IP68 · NEMA 6 protection · hazardous-area approvals

aluminum or stainless steel enclosure

VLS option to prevent damage from accidental release

DWS9S

Industrial Grade · SSI/BiSS Communication



SPECIFICATIONS

SUMMARY

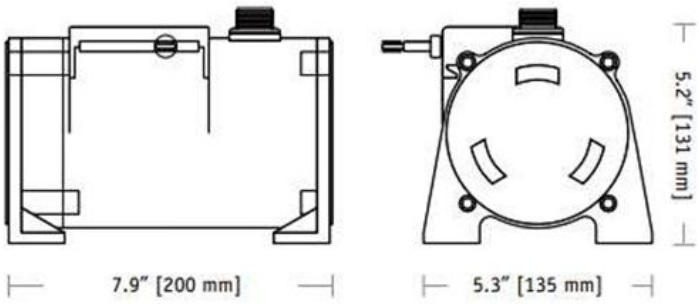
Full Stroke Range 0-14000mm
Output Signal ..... SSI·BISS
Accuracy ..... ±0.1% full stroke
Repeatability ..... see ordering information
Resolution ..... see ordering information
Measuring Cable 0.86/1.19 mm nylon-coated stainless or thermoplastic
Enclosure Material ... painted aluminum or 303 stainless steel
Sensor ..... plastic-hybrid precision potentiometer
Max. Cable Accel. ..... see ordering information
Weight ..... 3632 g (8 lb.) max.

ELECTRICAL

input voltage ..... see ordering information
input current ..... see ordering information
permissible load ..... 30 mA max.
driver type ..... clock and data signals / RS422
3 dB cut-off frequency ..... 500 kHz
alarm output SSI: optional alarm bit; BiSS: warning and alarm bits

ENVIRONMENTAL

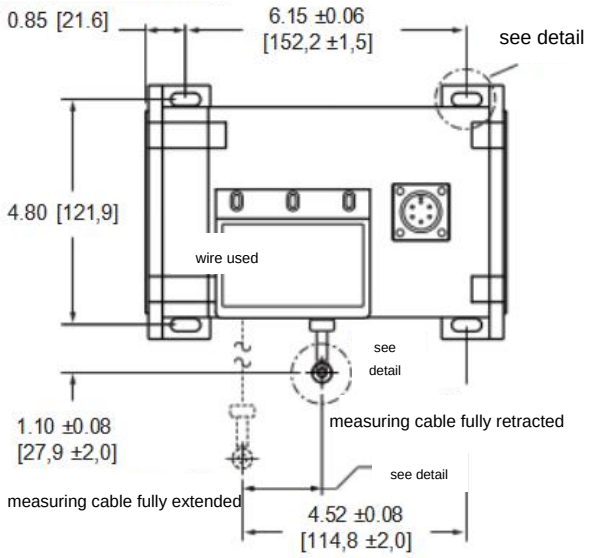
Enclosure ..... NEMA 4/4X/6,IP67/68
Operating Temperature ..... -40° to 200°F (-40° to 90°C)
Vibration ..... up to 10 g to 2000 Hz max.

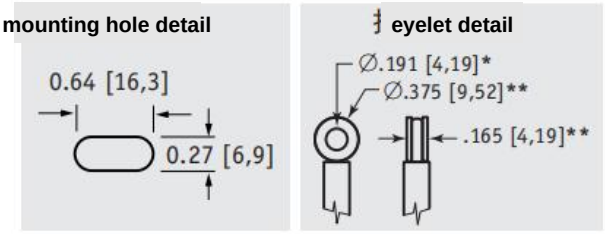


· see ordering information for available channels

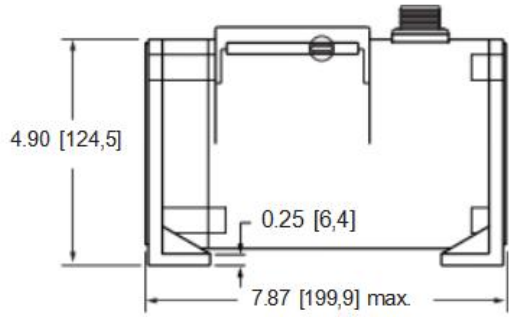
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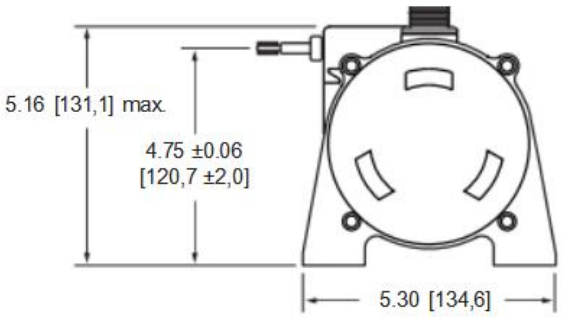
Outline Drawing (18 oz. cable tension only):



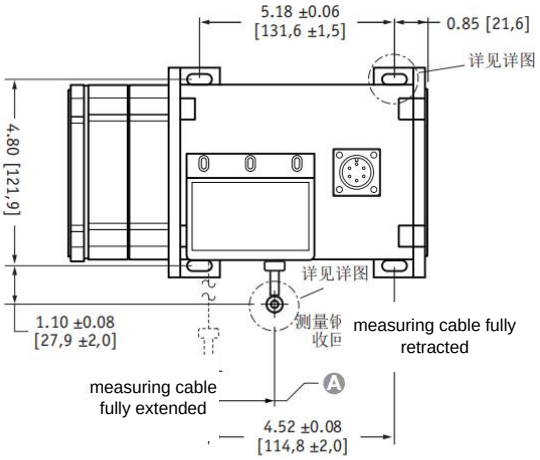


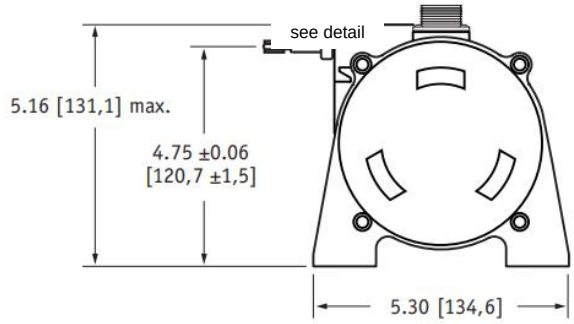
dimension (measuring cable) (mm)				
Full Stroke Range	20.07	21.84	30.23	39.88
2000	n/a	5.59	cable used	.40
2500	n/a	7.37	9.91	12.45
4000	n/a	11.18	14.99	18.54
5000	n/a	14.73	20.07	24.89
6500	n/a	18.54	24.89	30.99
7500	n/a	22.35	29.97	37.34
9000	n/a	25.91	35.05	43.43
10000	n/a	29.72	39.88	49.78
11500	n/a	33.27	44.96	n/a
12500	n/a	37.08	50.04	n/a
14000	40.89	40.89	n/a	n/a

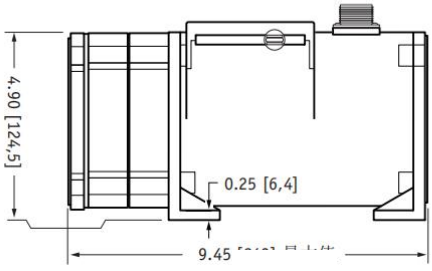




Outline Drawing (36 oz. cable tension only):







max.

Dimensions are in inches [mm]. Tolerances are 0.03 in. [0.5 mm]

unless otherwise noted.

* tolerance = +.005 ·.001 [+.13 ·.03]

** tolerance = +.005 ·.005 [+.13 ·.13]

DWS9S - String Potentiometer

ORDERING INFORMATION

Model Number:

DWS9S - R range ·A enclosure material ·B cable material
C cable exit ·D signal type ·E electrical connection

Sample Model Number:

DWS9S - 5000 - 1 - 1 - UP - SG - 3
Ⓡ Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

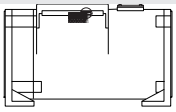
- Ⓡ 5000 = 5000 mm range
- Ⓐ 1 = aluminum, 18 oz. tension
- Ⓑ 1 = 0.86 mm nylon-coated ss
- Ⓒ UP = up cable exit
- Ⓓ SG = SSI Gray code signal
- Ⓔ 3 = 6-pin metal connector

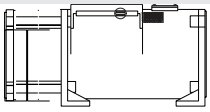
Range:

R order code:	2000	2500	4000	5000	6500	7500	9000	10000	11500	12500	14000
stroke (mm):	2000	2500	4000	5000	6500	7500	9000	10000	11500	12500	14000
resolution (12 bit):	0.0776 mm/step										
resolution (22 bit):	0.0758 ·m/step										

Enclosure Material & Cable Tension:

A order code:	1	3	2	4
cable tension (±30%):	18 oz.		36 oz.	
enclosure material:	painted aluminum	303 stainless steel	painted aluminum	03 stainless steel
max. acceleration:	1 g		5 g	
max. velocity:	1524mm/sec	1524mm/sec	5080mm/sec	5080mm/sec



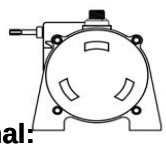


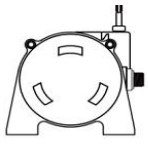
Cable Material:

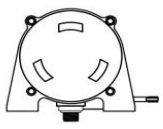
B order code:	1	2	3	4
	0.86 mm nylon-coated stainless steel	1.19 mm stainless steel	1.47 mm Vectra fiber with PVC jacket	0.79 mm stainless steel
available ranges:	full stroke	≤12500mm	available for 10000mm only	14000mm
general purpose:	indoor	outdoor, high temperature	high voltage, magnetic fields	outdoor, high temperature

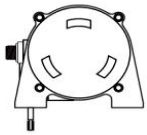
Cable Exit:

C order code	1	2	3	4
	front	up	back	down









Output Signal:

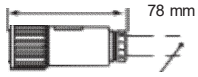
D order code:	SB	SD	SG	SC	BI	BC	BE	BV
signal output	SSI binary signal	SSI binary signal (+1 Vpp sine-cosine signal)	SSI Gray	SSI Gray code signal (+1 Vpp sine-cosine signal)	BISS-B	BiSS-B (+1 Vpp sine-cosine signal)	BISS-C	BiSS-C (+1 Vpp sine-cosine signal)
input voltage	5 VDC (±5%, +10%) / 7-30 VDC							
	Example: order code = BE = BiSS-C							

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Electrical Connection:

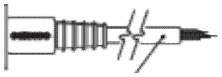
E order code: 1 2 3 4

6-pin thermoplastic connector



protection: IP 67, NEMA 4X**, 6
size: 78 mm

3 m waterproof cable



protection: IP 67, NEMA 4X**, 6
size: 3 m × 10 mm dia.

protection: IP 65, NEMA 4
size: 0.5 in.
cable: stranded (7 x 19 mm max.),
max. conductor size: 16 AWG

protection: IP 67, NEMA 6
size: 7.5 m × 5 mm dia.

30 m waterproof cable
cable accepted: 14 - 8 mm dia.
max. conductor size: 16 AWG
mating receptacle: MS3102E-14S-6P
mating plug: MS3106E-14S-6S

3 m pressure-tested waterproof cable*
construction: 3 conductors, 18 AWG,
cable type: SJTOW (per UL 62)
portable cord)

8 m pressure-tested waterproof cable*
cable dia.: max. conductor size: 16 AWG
mating receptacle: MS3102E-14S-6P
mating plug: MS3106E-14S-6S

construction: 6 conductors, 24 AWG,
shielded

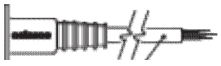
order code: 5 6 7

30 m waterproof cable



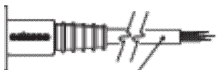
protection: IP 67, NEMA 4X**, 6
size: 30 m × 10 mm dia.
construction: 3 conductors, 18 AWG, cable type

3 m pressure-tested waterproof cable*



protection: IP 68, NEMA 4X**, 6P
size: 3 m × 10 mm dia.
construction: 3 conductors, 18 AWG, cable type
SJTOW (heavy-duty portable cord per UL 62)

8 m pressure-tested waterproof cable*



protection: IP 68, NEMA 4X**, 6P
size: 30 m × 10 mm dia.]
construction: 3 conductors, 18 AWG, cable type
SJTOW (heavy-duty portable cord per UL 62)

signal	cable color	6-pin thermoplastic connector
main supply (DC 5 V /		
supply ground (0 V)		
Clock	yellow	C
Clock -	GREEN	D
Data	pink	E
Data -	grey	F
A+	white/green 1	
A-	brown/green 1	
B+	red/blue 1	
B-	grey/pink 1	
1 selectable + SinCos 1 Vpp		

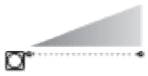
NOTE: test pressure: 30 m water column (28.12 g/mm2 differential); medium: air; duration: two hours
NEMA 4X applies to stainless steel enclosure only

Output Signal Adjustment:

To access the signal board, remove the four socket-head screws and the end-cap bracket.

signal output

0...20 m A
or
4...20 m A



20...0 mA
or
20...4 m A

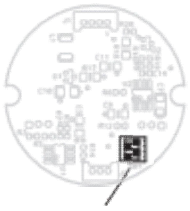


DIP switch settings

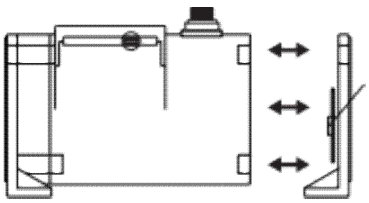




signal board



DIP switch positions



internal DIP switches and signal board

Output Signal Selection:

WARNING! Never remove the spring-side end cap; doing so may release the spring and and permanent damage.

Simply change the DIP switch settings on the internal signal board to reverse the output direction at any time.

After changing the settings, adjust zero and full stroke so the signal matches the start and end of travel exactly.