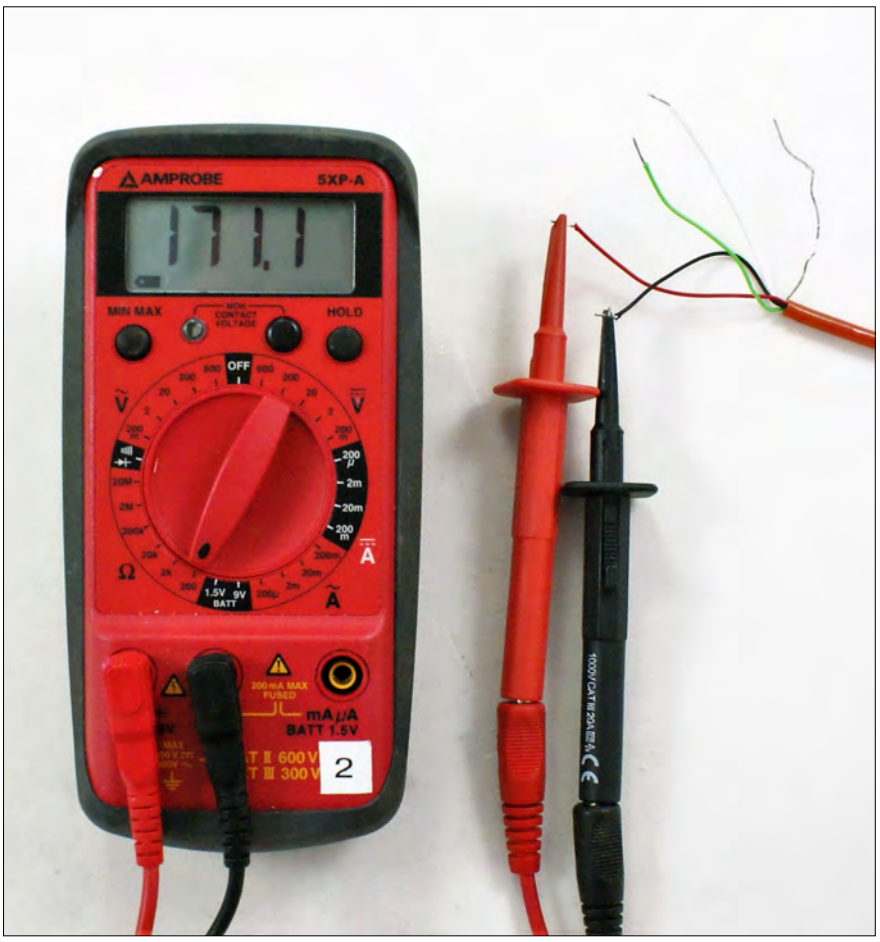
QUICK GUIDE

Resistance diagnostics for troubleshooting vibrating wire sensors and cables

INTRODUCTION

Where damage to a sensor or cable is suspected this guide illustrates the way in which simple resistance checks can be taken to identify the possible cause of the problem.

Resistance checks can be made with most types of multi-meter which are readily available in the market.



RESISTANCE OF THE COILS

STEP 1
Set the range to 200Ω or Ω if using a multi-meter which has automatic ranging.

STEP 2
Connect the VW+ (red) conductor to the red lead on the multi-meter and the VW- (black) to the black lead on the multi-meter.

The correct readings should be as follows ±10%

Pressure Transducer ~ 160Ω

Strain gauge ~ 180Ω

Co-axial coil ~ 50Ω

IF THE VALUES ARE OUT OF THESE RANGES THEN THERE IS A FAULT IN THE COILS

IF THE VALUES ARE 50% THEN THERE IS A PROBLEM WITH ONE OF THE COILS

RESISTANCE OF THE THERMISTOR

STEP 1
Set the range to 20kΩ or Ω if using a multi-meter which has automatic ranging.

STEP 2
Connect the T+ (green) conductor to the red lead on the multi-meter and the T- (white) to the black lead on the multi-meter.

The readings will be dependent on the temperature as below:-

10°C ~ 5.971kΩ (5971Ω)
15°C ~ 4.714kΩ (4714Ω)
20°C ~ 3.478kΩ (3478Ω)
25°C ~ 3.000kΩ (3000Ω)

PLEASE REFER TO THE THERMISTOR LOOK UP TABLE ON PAGE 4

IF THESE VALUES DIFFER THEN THERE IS A PROBLEM WITH THE THERMISTOR OR IT'S CONDUCTORS

THERMISTOR LOOK UP TABLE

Ohms	Temp	Ohms	Temp	Ohms	Temp	Ohms	Temp	Ohms	Temp
201.1K	-50	16.60K	-10	2417	30	525.4	70	153.2	110
187.3K	-49	15.72K	-9	2317	31	507.8	71	149.0	111
174.5K	-48	14.90K	-8	2221	32	490.9	72	145.0	112
162.7K	-47	14.12K	-7	2130	33	474.7	73	141.1	113
151.7K	-46	13.39K	-6	2042	34	459.0	74	137.2	114
141.6K	-45	12.70K	-5	1959	35	444.0	75	133.6	115
132.2K	-44	12.05K	-4	1880	36	429.5	76	130.0	116
123.5K	-43	11.44K	-3	1805	37	415.6	77	126.5	117
115.4K	-42	10.86K	-2	1733	38	402.2	78	123.2	118
107.9K	-41	10.31K	-1	1664	39	389.3	79	119.9	119
101.0K	-40	9796	0	1598	40	376.9	80	116.8	120
94.48K	-39	9310	1	1535	41	364.9	81	113.8	121
88.46K	-38	8851	2	1475	42	353.4	82	110.8	122
82.87K	-37	8417	3	1418	43	342.2	83	107.9	123
77.66K	-36	8006	4	1363	44	331.5	84	105.2	124
72.81K	-35	7618	5	1310	45	321.2	85	102.5	125
68.30K	-34	7252	6	1260	46	311.3	86	99.9	126
64.09K	-33	6905	7	1212	47	301.7	87	97.3	127
60.17K	-32	6576	8	1167	48	292.4	88	94.9	128
56.51K	-31	6265	9	1123	49	283.5	89	92.5	129
53.10K	-30	5971	10	1081	50	274.9	90	90.2	130
49.91K	-29	5692	11	1040	51	266.6	91	87.9	131
46.94K	-28	5427	12	1002	52	258.6	92	85.7	132
44.16K	-27	5177	13	965.0	53	250.9	93	83.6	133
41.56K	-26	4939	14	929.6	54	243.4	94	81.6	134
39.13K	-25	4714	15	895.8	55	236.2	95	79.6	135
36.86K	-24	4500	16	863.3	56	229.3	96	77.6	136
34.73K	-23	4297	17	832.2	57	222.6	97	75.8	137
32.74K	-22	4105	18	802.3	58	216.1	98	73.9	138
30.87K	-21	3922	19	773.7	59	209.8	99	72.2	139
29.13K	-20	3748	20	746.3	60	203.8	100	70.4	140
27.49K	-19	3583	21	719.9	61	197.9	101	68.8	141
25.95K	-18	3426	22	694.7	62	192.2	102	67.1	142
24.51K	-17	3277	23	670.4	63	186.8	103	65.5	143
23.16K	-16	3135	24	647.1	64	181.5	104	64.0	144
21.89K	-15	3000	25	624.7	65	176.4	105	62.5	145
20.70K	-14	2872	26	603.3	66	171.4	106	61.1	146
19.58K	-13	2750	27	582.6	67	166.7	107	59.6	147
18.52K	-12	2633	28	562.8	68	162.0	108	58.3	148
17.53K	-11	2523	29	543.7	69	157.6	109	56.8	149

RESISTANCE OF ALL INDIVIDUAL CONDUCTORS

STEP 1
Set the range to 20kΩ or Ω if using a multi-meter which has automatic ranging.

STEP 2
All conductors should be checked by connecting to the red and black leads on the multi-meter as follows:-

Red & screen

Black & screen

Green & screen

White & screen

A value of O.L (Open Loop) means that there is a high/infinite resistance = OK

If any are less than this then it is likely that there has been cable damage.

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