
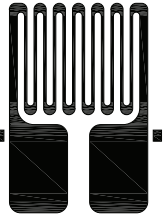
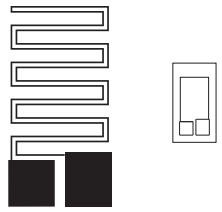
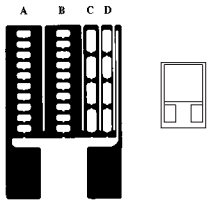
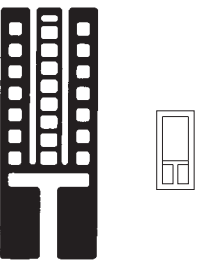
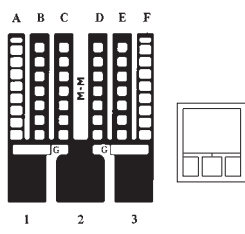
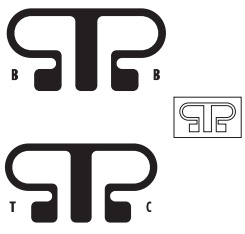


## Bondable Resistors for Transducers - Selection Chart

GAGE PATTERN AND DESIGNATION Actual size shown on right Insert Desired S-T-C No. in Spaces Marked XX. See Note 1	RESISTANCE IN OHMS	DIMENSIONS				
		PATTERN		MATRIX		
		Length	Width	Length	Width	
<p style="text-align: center;"><b>A02</b></p>  <p>N2B-TR-A02-00150 N2B-TR-A02-00175 N2B-TR-A02-00200 N2B-TR-A02-00250 N2B-TR-A02-00300 N2B-TR-A02-00400 N2B-TR-A02-00600 N2B-TR-A02-00650 N2B-TR-A02-00700 N2T-TR-A02-00100 N2T-TR-A02-00125 N2T-TR-A02-00150 N2T-TR-A02-00200 N2T-TR-A02-00225 N2T-TR-A02-00300 N2T-TR-A02-00400 N2T-TR-A02-00450 N2T-TR-A02-00500</p>	15	A02				
	17.5	0.24	0.13	0.30	0.19	
	20	6.1	3.3	7.6	4.8	
	25	A06				
	30	0.19	0.13	0.24	0.18	
	40	4.8	3.3	6.1	4.6	
	60	<p><b>A Pattern</b> fixed resistors are available in two sizes and several standard resistance values as shown. Custom resistance values are available for a small set-up charge and 500-piece minimum order. Resistance tolerance is <math>\pm 1\%</math> at <math>+75^\circ\text{F}</math> [<math>+24^\circ\text{C}</math>]. Recommended Uses:</p> <ul style="list-style-type: none"> <li>span-shift-versus-temperature compensation</li> <li>temperature sensing</li> </ul> <p><b>Construction</b> A02 and A06 pattern resistors are normally manufactured and stocked in unencapsulated form but can be supplied with a thin layer of polyimide film covering the grid. Solder tabs are left exposed for simplified lead connections. To include this feature add OPTION E2 to the resistor designation. Examples: N2B-TR-A06-00200/E2, N2T-TR-A02-00250/E2. Resistance tolerance on Option E2 versions is <math>\pm 1.5\%</math> at <math>+75^\circ\text{F}</math> [<math>+24^\circ\text{C}</math>].</p>				
	65					
	70					
	10					
	12.5					
	15					
	20					
	22.5					
	30					
	40					
	45					
	50					
	<p style="text-align: center;"><b>A06</b></p>  <p>N2B-TR-A06-00150 N2B-TR-A06-00175 N2B-TR-A06-00200 N2B-TR-A06-00250 N2B-TR-A06-00300 N2B-TR-A06-00400 N2B-TR-A06-00600 N2B-TR-A06-00650 N2B-TR-A06-00700 N2T-TR-A06-00100 N2T-TR-A06-00125 N2T-TR-A06-00150 N2T-TR-A06-00200 N2T-TR-A06-00225 N2T-TR-A06-00300 N2T-TR-A06-00400 N2T-TR-A06-00450 N2T-TR-A06-00500</p>	15	<p><b>B Pattern</b> resistors are bifilar adjustable types. The practical range of adjustment is from <math>R_{\text{MAX}}</math> to <math>0.15 R_{\text{MAX}}</math>, where <math>R_{\text{MAX}}</math> is nominal resistance prior to adjustment (see Resistor Adjustment Instructions). Recommended Uses:</p> <ul style="list-style-type: none"> <li>span set (EA, N2A)</li> <li>span-shift-versus-temperature compensation (N2T)</li> </ul>			
		17.5				
20						
25						
30						
40						
60						
65						
70						
10						
12.5						
15						
20						
22.5						
30						
40						
45						
50						
<p>N2A-XX-B31-01250 EA-XX-B31-02500 N2A-XX-B32-01000 EA-XX-B32-02000 N2A-XX-B34-00700 EA-XX-B34-01400 N2T-TR-B32-00160 N2T-TR-B32-00300 N2T-TR-B34-00110 N2T-TR-B34-00220</p> 	125	0.25	0.13	0.33	0.18	
	250	6.4	3.3	8.4	4.6	
	100	<p><b>B Pattern</b> resistors are bifilar adjustable types. The practical range of adjustment is from <math>R_{\text{MAX}}</math> to <math>0.15 R_{\text{MAX}}</math>, where <math>R_{\text{MAX}}</math> is nominal resistance prior to adjustment (see Resistor Adjustment Instructions). Recommended Uses:</p> <ul style="list-style-type: none"> <li>span set (EA, N2A)</li> <li>span-shift-versus-temperature compensation (N2T)</li> </ul>				
	200					
	70					
	140					
	16					
	30					
	11					
	22					

**Note 1:** All products are RoHS compliant.

Bondable Resistors for Transducers - Selection Chart

GAGE PATTERN AND DESIGNATION Actual size shown on right Insert Desired S-T-C No. in Spaces Marked XX See Note 1	RESISTANCE IN OHMS		DIMENSIONS			
			PATTERN		MATRIX	
			Length	Width	Length	Width
N2B-TR-C11-00050 N2B-TR-C12-00100 N2B-TR-C12-00200 N2B-TR-C13-00400 N2B-TR-C13-00800 	Before Cut After Cut 5 12 10 24 20 48 40 96 80 192	<b>C Pattern</b> grid and adjustable ladder resistors are available in various nominal resistances adjustable to 240% of the initial value. Nominal cutting steps: 4 at 20%; 4 at 10%; and 20 at 1% (see Resistor Adjustment Instructions). Recommended Uses: <ul style="list-style-type: none"> <li>span-shift-versus-temperature compensation</li> </ul>				
		0.30	0.20	0.34	0.23	
		7.6	5.1	8.6	5.9	
		0.5	0.35	0.14	0.41	0.20
		6	8.9	3.6	10.4	5.1
N2F-TR-D01-00005 N2B-TR-D01-00060 N2A-XX-D01-00180 EA-XX-D01-00360 N2K-XX-D01-00500/DP N2K-XX-D01-00750/DP 	0.5 6 18 36 50 75	The <b>D Pattern</b> adjustable ladder resistor is a small, single-network pattern available in various alloys and resistances (see Resistor Adjustment Instructions). Resistances listed are nominal fully cut values. Recommended Uses: <ul style="list-style-type: none"> <li>zero-shift compensation (N2F)</li> <li>span-shift-versus-temperature compensation (N2B)</li> <li>span set (EA, N2A, and N2K)</li> </ul>				
		0.35	0.30	0.41	0.36	
		8.9	7.6	10.4	9.1	
		0.5	0.35	0.30	0.41	0.36
		6	8.9	7.6	10.4	9.1
N2F-TR-E01-00005 N2A-XX-E01-00060 N2A-XX-E01-00180 EA-XX-E01-00360 N2K-XX-E01-00500/DP N2K-XX-E01-00750/DP 	0.5 6 18 36 50 75	<b>E Pattern</b> adjustable ladder resistors are similar to the D Pattern but incorporate two adjustable networks on one matrix to provide the differential adjustment capability often required in bridge balance and zero-shift compensation (see Resistor Adjustment Instructions). Resistances listed are nominal fully cut values per network. Recommended Uses: <ul style="list-style-type: none"> <li>zero-shift compensation (N2F)</li> <li>bridge balance (EA, N2A, and N2K)</li> </ul>				
		0.15	0.29	0.21	3.5	
		3.8	7.4	5.3	8.9	
		2.5	0.15	0.29	0.21	3.5
		6.0	3.8	7.4	5.3	8.9
N2A-XX-H21-00025 N2A-XX-H21-00060 N2B-TR-H22-00010 	2.5 6.0 1.0	<b>H Pattern</b> resistors are adjusted upward in resistance value by rubbing the foil loops with a hand-held or electric pencil eraser. The H21 patterns, produced in constantan alloy, are used for bridge-balance adjustment. (2.5-ohm resistors are typically employed in 350-ohm bridges, and 6.0 ohm in 1000-ohm bridges.) The H22, produced in Balco alloy, is used for bridge zero-versus-temperature adjustment (see Resistor Adjustment Instructions). Resistance values are nominal. Recommended Uses: <ul style="list-style-type: none"> <li>bridge balance (H21)</li> <li>bridge zero-shift compensation (H22)</li> </ul>				
		0.15	0.29	0.21	3.5	
		3.8	7.4	5.3	8.9	

**RESISTANCE WIRE**

While wire does not track the temperature of the strain gages as closely as bondable resistors, there are instances where bondable resistors cannot be used due to limited mounting space. Micro-Measurements stocks two types of resistance wire alloys.

CATALOG NO./ WIRE ALLOY	QTY PER SPOOL	RESISTANCE PER FOOT (METER) NOMINAL	TCR [-10° to +50°C]	INSULATION	TEMPERATURE RANGE
137-HWN/Manganin	200ft [61m]	14Ω (46Ω)	± 0.0011%/°F [± 0.002%/°C]	Enamel	+15° to +120°F [-10° to +50°C] (up to +175°F [+80°C] if proper aging is done)
142-JWN/Balco	500ft [152 m]	19Ω (62Ω)	+0.25%/°F [+0.45%/°C]	Enamel	-15° to +300°F [-10° to +150°C]

**Note 1:** All products are RoHS compliant.

## Disclaimer

All product specifications and data are subject to change without notice.

Vishay Precision Group, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay Precision Group"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay Precision Group disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay Precision Group's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay Precision Group.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay Precision Group products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay Precision Group for any damages arising or resulting from such use or sale. Please contact authorized Vishay Precision Group personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.