



SENSOR SUMMARY CHART

Sensor Model	Dimension Dia. x HT (mm [inch]) (1)	Weight (gm)	Operating Temperature °C	Shock Limit (g) (2)	Case Material	Face Material	Connector Type	Connection Location	Peak Sensitivity dB ref. 1V/(m/s) [1V/ubar]	Operating Freq. Range (kHz)*	Resonant Frequency (kHz)	Directionality (dB)	Grounding	Seal Type
General Purpose Sensors														
A3	16x23 [.4x.9]	31	-65 to 177	500	Stainless Steel (304)	Stainless Steel (304)	Microdot 10-32	SIDE	83 [-71]	15-55	30 [35]	±1.5	A	EPOXY
D9241A	24x20 [.94x.79]	56	-45 to 125	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	82 [-70]	20-60	30	N/A	B	EPOXY
R3a	19x22 [.75x.88]	41	-65 to 175	500	Stainless Steel (304)	Ceramic	SMA	SIDE	80 [-63]	25-70	29	±1.5	B	EPOXY
R6 or R6a	19x22 [.75x.88]	38	-65 to 175	500	Stainless Steel (304)	Ceramic	SMA	SIDE	75 [-64]	35-100	55 [90]	±1.5	B	EPOXY
R6D	19x22 [.75x.84]	34	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	75 [-64]	35-100	55 [90]	±1.5	B	EPOXY
R6S	19x22 [.75x.84]	28	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE	75 [-64]	35-100	55 [90]	±1.5	B	EPOXY
R15 or R15a	19x22 [.75x.88]	34	-65 to 175	500	Stainless Steel (304)	Ceramic	SMA	SIDE (3)	69 [-63]	50-400	75 [150]	±1.5	B	EPOXY
R15D	18x17 [.7x.65]	25	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	58 [-62]	50-400	75 [150]	±1.5	B	EPOXY
R15S	18x17 [.7x.65]	(8)	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE	69 [-63]	50-400	75 [150]	±1.5	B	EPOXY
R30 or R30a	19x22 [.75x.88]	29	-65 to 177	500	Stainless Steel (304)	Ceramic	SMA	SIDE	58 [-62]	150-400	300 [330]	±1.5	B	EPOXY
R30D	18x17 [.7x.65]	20	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	58 [-62]	150-400	300 [330]	±1.5	B	EPOXY
R30S	18x17 [.7x.65]	(8)	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE	58 [-62]	150-400	300 [330]	±1.5	B	EPOXY
R50 or R50a	19x22 [.75x.88]	32	-65 to 175	500	Stainless Steel (304)	Ceramic	SMA	SIDE	62 [-62]	100-700	100 [500]	±1.5	B	EPOXY
R50D	18x17 [.7x.65]	(8)	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	62 [-62]	100-700	100 [500]	±1.5	B	EPOXY
R50S	18x17 [.7x.65]	(8)	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE	62 [-62]	100-700	100 [500]	±1.5	B	EPOXY
R80 or R80a	19x21 [.75x.85]	32	-65 to 175	500	Stainless Steel (304)	Ceramic	SMA	SIDE	58 [-62]	200-1000	200 [800]	±1.5	B	EPOXY
R80D	18x17 [.7x.65]	23	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	58 [-62]	200-1000	200 [800]	±1.5	B	EPOXY
R80S	18x17 [.7x.65]	(8)	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE	58 [-62]	200-1000	200 [800]	±1.5	B	EPOXY
Integral Preamp Sensors														
CH6I	29x39 [1.13x1.54]	56	-35 to 75	500	Anodized Aluminum	Ceramic	BNC	SIDE	117 [-23]	40-100	55 [98]	±1.5	A	EPOXY
CH15I	29x33 [1.13x1.28]	51	-35 to 75	500	Anodized Aluminum	Ceramic	BNC	SIDE	109 [-22]	100-200	75 [150]	±1.5	A	EPOXY
CH30I	29x33 [1.13x1.28]	45	-35 to 75	500	Anodized Aluminum	Ceramic	BNC	SIDE	97 [-22]	125-450	300 [350]	±1.5	A	EPOXY
R3I-AST	29x39 [1.13x1.54]	147	-35 to 75	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	120 [-28]	10-40	25 [31]	±1.5	A	EPOXY
R6I-AST	29x40 [1.13x1.6]	98	-35 to 75	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	117 [-23]	40-100	55 [98]	±1.5	A	EPOXY
R15I-AST	29x31 [1.13x1.23]	70	-35 to 75	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	109 [-22]	80-200	75 [150]	±1.5	A	EPOXY
R30I-AST	29x31 [1.13x1.23]	75	-35 to 75	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	97 [-22]	200-450	300 [350]	±1.5	A	EPOXY
R50I-AST	29x30 [1.13x1.16]	70	-35 to 75	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	88 [-26]	300-550	320 [500]	±1.5	B	EPOXY
WDI	29x30 [1.13x1.16]	70	-35 to 75	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	96 [-25]	200-900	125 [500]	±1.5	B	EPOXY
PK30I	21x27 [.81"x1.06"]	51	-35 to 80	500	Stainless Steel (304)	Ceramic	SMA	SIDE	82 [-39]	200-450	300 [350]	±1.5		
LN150I	29x32 [1.13x1.28]	51	-35 to 75	500	Anodized Aluminum	Ceramic	BNC	SIDE	110 [-18]	50-200	90 [150]	±1.5		
LNWDI	31x28.575 [1.22x1.125]	70	-40 to 70	500	Stainless Steel (304)	Ceramic	BNC	SIDE	92 [-25]	125-900	125 [450]	±1.5		
PK6I	20.6x27 [0.812x1.06]	45	-35 to 80	500	Stainless Steel (304)	Ceramic	SMA	SIDE	106	35-65	55	±1.5		
PK15I	21x27 [.81x1.06]	51	-35 to 80	500	Stainless Steel (304)	Ceramic	SMA	SIDE	109 [-36]	80-200	75 [150]	±1.5		
R50I-UC	33x35 [1.31x1.38]	(8)	-30 to 65	500	Stainless Steel/Epoxy	Ceramic	BNC	SIDE	86 [-28]	300-550	300 [500]	±1.5	B	EPOXY
R30I-UC	33x35 [1.31x1.38]	(8)	-30 to 65	500	Stainless Steel/Epoxy	Ceramic	BNC	SIDE	98 [-24]	125-450	225 [350]	±1.5	B	EPOXY
R1.5I-AST	28.6x40.6 [1.125x1.55]	130	-35 to 75	500	Stainless Steel (304)	Stainless Steel (304)	BNC	SIDE	124	5-20	14	±1.5	A	EPOXY
R.45I	29x50 [1.125x2.0]	140	-35 to 75	500	Stainless Steel (304)	Ceramic	BNC	SIDE	124	5-30	20	±1.5	B	EPOXY
PKWDI	21x27 [.812x1.072]	51	-65 to 80	500	Stainless Steel/Epoxy	Ceramic	SMA	SIDE	84 [-34]	200-900	125 [500]	±1.5		
PK3I	20.6x27 [0.812x1.06]	52	-35 to 80	500	Stainless Steel (304)	Ceramic	SMA	SIDE	106	15-40	28	±1.5		
AM2I	29x51 [1.13x2.0]	81	-25 to 75	500	Stainless Steel	Anodized Aluminum	BNC	TOP	[-3]	22-25	[23]	35	A	EPOXY
AM4I	29x51 [1.13x2.0]	81	-25 to 75	500	Stainless Steel	Anodized Aluminum	BNC	TOP	[0]	39-42	[40]	30	A	EPOXY
ISPK6IUC	33x45 [1.31x1.75]	98	-40 to 70	500	Stainless Steel	Ceramic	BNC	SIDE	101	30-100	60	±1.5		EPOXY
ISPK15IUC	33x45 [1.31x1.75]	98	-40 to 70	500	Stainless Steel	Ceramic	BNC	SIDE	94 [-37]	50-400	75 [150]	±1.5		EPOXY
ISPK30IUC	33x45 [1.31x1.75]	98	-40 to 70	500	Stainless Steel	Ceramic	BNC	SIDE	84 [-44]	100-400	225 [350]	±1.5		EPOXY
ISPKWDIUC	33x45 [1.31x1.75]	98	-40 to 70	500	Stainless Steel	Ceramic	BNC	SIDE	80 [-38]	100-800	125 [530]	±1.5		EPOXY
Wideband Sensors														
D9202B	18x17 [.7x.65]	(8)	-65 to 125	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	55 [-53]	400-800	475 [575]	±1.5	B	EPOXY
D9203B	18x17 [.7x.65]	20	-65 to 125	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	65 [-60]	150-900	175 [500]	±1.5	B	EPOXY
S9208	25x25 [1x1]	90	-54 to 121	10	Stainless Steel (304)	Stainless Steel (304)	Microdot 10-32	SIDE	45(4) [-85]	200-1000	500 [500]	±1.5	A	SOLDER
UT-1000	18x17 [.7x.65]	20	-65 to 177	500	Stainless Steel (304)	Ceramic	Microdot 10-32	SIDE	64 [-73]	100-950	60 [450]	±1.5	B	EPOXY
WD	18x17 [.7x.65]	20	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	55 [-62.5]	100-900	125 [650]	±1.5	B	EPOXY
WDI-AST	29x30 [1.13x1.16]	70	-35 to 75	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	96 [-25]	200-900	125 [500]	±1.5	B	EPOXY
WSa	19x21 [.75x.85]	32	-65 to 175	500	Stainless Steel (304)	Ceramic	SMA	SIDE	55 [-62]	100-1000	125 [650]	±1.5	B	EPOXY

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									Peak Sensitivity dB ref. 1V/(m/s) [1V/ubar]	Operating Freq. Range (kHz)*	Resonant Frequency (kHz)	Directionality (dB)	Grounding	Seal Type
Low Frequency Sensors														
R.45	28.6x40.6 [1.125x1.55]	121	-45 to 150	500	Stainless Steel (304)	Ceramic	BNC	SIDE	85	5-30	20	±1.5	B	EPOXY
R1.5	28.6x40.6 [1.125x1.55]	100	-35 to 150	500	Stainless Steel (304)	Stainless Steel (304)	BNC	SIDE	85	5-20	14	±1.5	A	EPOXY
R.45I	29x50 [1.125x2.0]	140	-35 to 75	500	Stainless Steel (304)	Ceramic	BNC	SIDE	124	5-30	20	±1.5	B	EPOXY
R1.5I-AST	28.6x40.6 [1.125x1.55]	130	-35 to 75	500	Stainless Steel (304)	Stainless Steel (304)	BNC	SIDE	124	5-20	14	±1.5	A	EPOXY
PK3I	20.6x27 [0.812x1.06]	52	-35 to 80	500	Stainless Steel (304)	Ceramic	SMA	SIDE	106	15-40	28	±1.5		
Medium Frequency Sensors														
PK6I	20.6x27 [0.812x1.06]	45	-35 to 80	500	Stainless Steel (304)	Ceramic	SMA	SIDE	106	35-65	55	±1.5		
LN150I	29x32 [1.13x1.28]	51	-35 to 75	500	Anodized Aluminum	Ceramic	BNC	SIDE	110 [-18]	50-200	90 [150]	±1.5		
PK15I	21x27 [.81x1.06]	51	-35 to 80	500	Stainless Steel (304)	Ceramic	SMA	SIDE	109 [-36]	80-200	75 [150]	±1.5		
Miniature Sensors														
HD15	8 x 9.5 [.313 x .375]	3	-65 to 125	500	Stainless Steel (304)	Stainless Steel	BNC or SMA	TOP	[-66]	130-530	[150]	N/A	A	EPOXY
HD2WD	5x4x11 [.18x.14x.44]	<1	-65 to 125	500	Anodized Aluminum	Anodized Aluminum	BNC or SMA	SIDE	[-70]	330-1850	N/A	N/A	A	EPOXY
HD50	6.2x14 [.25x.56]	1	-65 to 125	500	Brass	Brass	BNC or SMA	TOP	[-70]	400-750	500	N/A	A	EPOXY
Micro30	10x12 [.4x.5]	5	-65 to 177	500	Stainless Steel (304)	Ceramic	Microdot 10-32	SIDE (3)	65 [-67.5]	150-400	125 [225]	±1.5	B	EPOXY
Micro30D	18x17 [.7x.65]	23	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	65 [-67.5]	150-400	125 [225]	±1.5	B	EPOXY
Micro30S	10x12 [.4x.5]	(8)	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	65 [-67.5]	150-400	125 [225]	±1.5	B	EPOXY
Micro50D	17x17 [.7x.65]	25	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	Side	62 [-62]	100-700	100 [500]	±1.5		
Micro80	10x12 [.4x.5]	5	-65 to 177	500	Stainless Steel (304)	Ceramic	Microdot 10-32	SIDE	57 [-65]	200-900	250 [325]	±1.5	B	EPOXY
Micro80D	10x12 [.4x.5]	5	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	57 [-65]	175-900	250 [325]	±1.5	B	EPOXY
Micro80S	10x12 [.4x.5]	5	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	57 [-65]	200-900	250 [325]	±1.5	B	EPOXY
Micro100	10x12 [.4x.5]	5	-65 to 177	500	Stainless Steel (304)	Ceramic	Microdot 10-32	SIDE	[-64]	200-950	300 [600]	±1.5	B	EPOXY
Micro100D	10x12 [.4x.5]	23	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	60 [-64]	200-950	300 [600]	±1.5	B	EPOXY
Micro100S	10x12 [.4x.5]	(8)	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	56 [-61]	200-950	250 [325]	±1.5	B	EPOXY
Micro200HF	10x12 [.4x.5]	5	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE	62 [-72]	500-4500	2500	±1.5	B	EPOXY
Mini30S	10x12 [.4x.5]	6	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE	62 [-65]	270-970	325	±1.5		
Nano30	8x8 [0.3x0.3]	2	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	62 [-72]	150-400	140 [300]	±1.5	B	EPOXY
PICO	5x4 [.2x.15]	(8)	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	54 [-68]	200-750	250 [500]	±1.5	B	EPOXY
PICO HF-1.2	5x4 [.2x.15]	0.1	-65 to 177	500	Stainless Steel (304)	Ceramic	BNC	SIDE	[-72]	500-1850	[600]	±1.5	B	EPOXY
S9225	3.6x2.4 [.15x.1]	(8)	-54 to 121	500	Anodized Aluminum	Anodized Aluminum	BNC	SIDE	48 [-77.5]	300-1800	250 [600]	±1.5	B	EPOXY
Intrinsically Safe Sensors														
ISR.45	33x43 [1.32x1.68]	155	-45 to 125	1,000	Stainless Steel/Epoxy	Ceramic	Pigtail	SIDE	87 [N/A]	3-30	7 [N/A]	±1.5	B	EPOXY
ISR1.5	33x36 [1.32x1.42]	120	-45 to 125	1,000	Stainless Steel/Epoxy	Ceramic	Pigtail	SIDE	87 [N/A]	5-20	15 [N/A]	±1.5	B	EPOXY
ISR3	33x36 [1.32x1.42]	120	-45 to 125	1,000	Stainless Steel/Epoxy	Ceramic	Pigtail	SIDE	8 [-63]	10-50	29	±1.5	B	EPOXY
ISR6	23x19 [.89x.76]	33	-45 to 125	1,000	Stainless Steel/Epoxy	Ceramic	Pigtail	SIDE	76 [-63]	35-80	50 [85]	±1.5	B	EPOXY
ISR15	23x19 [.89x.76]	27	-45 to 125	1,000	Stainless Steel/Epoxy	Ceramic	Pigtail	SIDE	69 [-62]	50-200	75 [150]	±1.5	B	EPOXY
ISR30	23x19 [.89x.76]	27	-45 to 125	1,000	Stainless Steel/Epoxy	Ceramic	Pigtail	SIDE	58 [-64]	150-400	300 [350]	±1.5	B	EPOXY
ISR50	23x19 [.89x.76]	27	-45 to 125	1,000	Stainless Steel/Epoxy	Ceramic	Pigtail	SIDE	62 [-65]	100-700	100 [500]	±1.5	B	EPOXY
ISD9203B	23x19 [.89x.76]	27	-45 to 125	1,000	Stainless Steel/Epoxy	Ceramic	Pigtail	SIDE	65 [-60]	150-850	175 [500]	±1.5	B	EPOXY
ISWD	23x19 [.89x.76]	27	-45 to 125	500	Stainless Steel/Epoxy	Ceramic	Pigtail	SIDE	55 [-63]	150-850	125 [500]	±1.5	B	EPOXY
ISPK6IUC	33x45 [1.31x1.75]	98	-40 to 70	500	Stainless Steel	Ceramic	BNC	SIDE	101	30-100	60	±1.5		EPOXY
ISPK15IUC	33x45 [1.31x1.75]	98	-40 to 70	500	Stainless Steel	Ceramic	BNC	SIDE	94 [-37]	50-400	75 [150]	±1.5		EPOXY
ISPK30IUC	33x45 [1.31x1.75]	98	-40 to 70	500	Stainless Steel	Ceramic	BNC	SIDE	84 [-44]	100-400	225 [350]	±1.5		EPOXY
ISPKWDIUC	33x45 [1.31x1.75]	98	-40 to 70	500	Stainless Steel	Ceramic	BNC	SIDE	80 [-38]	100-800	125 [530]	±1.5		EPOXY
Differential Sensors														
D9241A	24x20 [.94x.79]	56	-45 to 125	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	82 [-70]	10-60	30	±1.5	B	EPOXY
R6D	19x22 [.75x.84]	34	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	75 [-64]	35-100	55 [90]	±1.5	B	EPOXY
R15D	18x17 [.7x.65]	25	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	58 [-62]	50-400	75 [150]	±1.5	B	EPOXY
R30D	18x17 [.7x.65]	20	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	58 [-62]	150-400	300 [330]	±1.5	B	EPOXY
R50D	18x17 [.7x.65]	22	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	62 [-62]	100-700	100 [500]	±1.5	B	EPOXY
R80D	18x17 [.7x.65]	23	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	58 [-62]	200-1000	200 [800]	±1.5	B	EPOXY
D9202B	18x17 [.7x.65]	(8)	-65 to 125	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	55 [-53]	400-800	475 [575]	±1.5	B	EPOXY
D9203B	18x17 [.7x.65]	20	-65 to 125	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	65 [-60]	150-900	175 [500]	±1.5	B	EPOXY
WD	18x17 [.7x.65]	20	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	55 [-62.5]	100-900	125 [650]	±1.5	B	EPOXY

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Sensor Model	Dimension Dia. x HT (mm [inch]) (1)	Weight (gm)	Operating Temperature °C	Shock Limit (g) (2)	Case Material	Face Material	Connector Type	Connection Location	Peak Sensitivity dB ref. 1V/(m/s) [1V/ubar]	Operating Freq. Range (kHz)*	Resonant Frequency (kHz)	Directionality (dB)	Grounding	Seal Type
Differential Sensors (Continued)														
WDI-AST	29x30 [1.13x1.16]	70	-35 to 75	500	Stainless Steel (304)	Ceramic	BNC	SIDE (3)	96 [-25]	200-900	125 [500]	±1.5	B	EPOXY
Micro30D	18x17 [.7x.65]	23	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	65 [-67.5]	150-400	125 [225]	±1.5	B	EPOXY
Micro50D	17x17 [.7x.65]	25	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	Side	62 [-62]	100-700	100 [500]	±1.5		
Micro80D	10x12 [.4x.5]	5	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	57 [-65]	175-900	250 [325]	±1.5	B	EPOXY
Micro100D	10x12 [.4x.5]	23	-65 to 177	500	Stainless Steel (304)	Ceramic	Dual BNC	SIDE	60 [-64]	200-950	300 [600]	±1.5	B	EPOXY
ISD9203B	23x19 [.89x.76]	27	-45 to 125	1,000	Stainless Steel/Epoxy	Ceramic	Pigtail	SIDE	65 [-60]	150-850	175 [500]	±1.5	B	EPOXY
ISWD	23x19 [.89x.76]	27	-45 to 125	500	Stainless Steel/Epoxy	Ceramic	Pigtail	SIDE	55 [-63]	150-850	125 [500]	±1.5	B	EPOXY
PKWDI	21x27 [.812x1.072]	51	-65 to 80	500	Stainless Steel/Epoxy	Ceramic	SMA	SIDE	84 [-34]	200-900	125 [500]	±1.5		
LN150I	29x32 [1.13x1.28]	51	-35 to 75	500	Anodized Aluminum	Ceramic	BNC	SIDE	110 [-18]	50-200	90 [150]	±1.5		
LNWDI	31x28.575 [1.22x1.125]	70	-40 to 70	500	Stainless Steel (304)	Ceramic	BNC	SIDE	92 [-25]	125-900	125 [450]	±1.5		
High Temperature Sensors														
D9215	20x20 [.8x.8]	60	-200 to 540	10,000	Inconel 600	Inconel 600	Dual BNC	SIDE	52 [-82]	50-650	60 [100]	±1.5	A	WELDED
S9215	20x20 [.8x.8]	60	-200 to 540	10,000	Inconel 600	Inconel 600	BNC	SIDE	52 [-82]	50-650	60 [100]	±1.5	A	WELDED
Underwater/Underground Sensors														
R6-UC	33x35 [1.31x1.38]	(8)	-35 to 75	500	Stainless Steel/Epoxy	Ceramic	BNC	SIDE	78 [-66]	35-100	50 [90]	±1.5	B	EPOXY
R6I-UC	33x35 [1.31x1.38]	(8)	-30 to 65	500	Stainless Steel/Epoxy	Ceramic	BNC	SIDE	120 [-26]	35-100	50 [90]	±1.5	B	EPOXY
R15I-UC	33x35 [1.31x1.38]	(8)	-30 to 65	500	Stainless Steel/Epoxy	Ceramic	BNC	SIDE	108 [-24]	50-200	75 [150]	±1.5	B	EPOXY
R30I-UC	33x35 [1.31x1.38]	(8)	-30 to 65	500	Stainless Steel/Epoxy	Ceramic	BNC	SIDE	98 [-24]	125-450	225 [350]	±1.5	B	EPOXY
R50I-UC	33x35 [1.31x1.38]	(8)	-30 to 65	500	Stainless Steel/Epoxy	Ceramic	BNC	SIDE	86 [-28]	300-550	300 [500]	±1.5	B	EPOXY
R15-UG	18x17 [.69x.68]	(8)	-35 to 75	500	Stainless Steel/Epoxy	Ceramic	BNC	TOP/SIDE	69 [-63]	50 - 200	75 [150]	±1.5	B	EPOXY
R50-UG	18x17 [.69x.68]	(8)	-35 to 75	500	Stainless Steel/Epoxy	Ceramic	BNC	TOP/SIDE	62 [-65]	100 - 700	100 [500]	±1.5	B	EPOXY
ISPK6IUC	33x45 [1.31x1.75]	98	-40 to 70	500	Stainless Steel	Ceramic	BNC	SIDE	101	30-100	60	±1.5		EPOXY
ISPK15IUC	33x45 [1.31x1.75]	98	-40 to 70	500	Stainless Steel	Ceramic	BNC	SIDE	94 [-37]	50-400	75 [150]	±1.5		EPOXY
ISPK30IUC	33x45 [1.31x1.75]	98	-40 to 70	500	Stainless Steel	Ceramic	BNC	SIDE	84 [-44]	100-400	225 [350]	±1.5		EPOXY
ISPKWDIUC	33x45 [1.31x1.75]	98	-40 to 70	500	Stainless Steel	Ceramic	BNC	SIDE	80 [-38]	100-800	125 [530]	±1.5		EPOXY
Airborne Sensors														
AM2I	29x51 [1.13x2.0]	81	-25 to 75	500	Stainless Steel	Anodized Aluminum	BNC	TOP	[-3]	22-25	[23]	35	A	EPOXY
AM4I	29x51 [1.13x2.0]	81	-25 to 75	500	Stainless Steel	Anodized Aluminum	BNC	TOP	[0]	39-42	[40]	30	A	EPOXY
Rolling Sensor														
RS30	1.19" mm dia. wheel	200	0 to 125	500	Anodized Aluminum	Silicone Rubber	Micro Dot	SIDE	[-74]	160-340	[300]	±1.5	A	EPOXY
Very Low Noise Sensors														
LN150I	29x32 [1.13x1.28]	51	-35 to 75	500	Anodized Aluminum	Ceramic	BNC	SIDE	110 [-18]	50-200	90 [150]	±1.5		
LNWDI	31x28.575 [1.22x1.125]	70	-40 to 70	500	Stainless Steel (304)	Ceramic	BNC	SIDE	92 [-25]	125-900	125 [450]	±1.5		
Low-Temperature Sensors														
R15-LT	20x20 [0.8x0.8]	26	-200 to 200	500	Stainless Steel	Ceramic	BNC	SIDE	69 [-63]	50-200	140 [30]	±1.5		
High-Temperature Intrinsically Safe Sensors														
ISR3CA-HT	33x36 [1.3x1.4]	50	-40 to 150	500	Stainless Steel	Ceramic	BNC	SIDE	72	10-100	30	±1.5		EPOXY
ISR6CA-HT	33x36 [1.3x1.4]	27	-40 to 150	500	Stainless Steel	Ceramic	BNC	SIDE	71	35-100	60	±1.5		EPOXY
ISR15CA-HT	23x20 [0.89x0.8]	27	-40 to 150	500	Stainless Steel	Ceramic	BNC	SIDE	109 [-22]	50-400	75 [150]	±1.5		EPOXY
ISR30CA-HT	23x20 [0.89x0.8]	27	-40 to 150	1000	Stainless Steel	Ceramic	BNC	SIDE	58 [-64]	150-400	300 [350]	±1.5		EPOXY
ISR50CA-HT	23x20 [0.89x0.8]	27	-40 to 150	1000	Stainless Steel	Ceramic	BNC	SIDE	62 [-64]	100-700	100 [500]	±1.5		EPOXY
ISRWDCA-HT	23x20 [0.89x0.8]	27	-40 to 150	1000	Stainless Steel	Ceramic	BNC	SIDE	55 [-63]	150-850	125 [530]	±1.5		EPOXY

Notes
LEGEND:

- (1) Dimensions are rounded approximations
- (2) Peak g in any direction
- (3) Sensors are available to order with connector location on top
- (4) Sensor S9208 is a displacement transducer, and peak sensitivity is expressed in volts/mm.
- (5) Unidirectional sensor, 90 degree off axis.
- (6) Sensors supplied with top connector has the same diameter but with different height.
- (7) Underwater sensors can subject up to 200 PSI water pressure.
- (8) Sensor supplied with integral cable. Weight of sensor is not available.
- (9) Also available in differential configuration.

(10) Also available with integral cable.

(11) The directionality given for the airborne sensor is the beam angle at -3 dB.

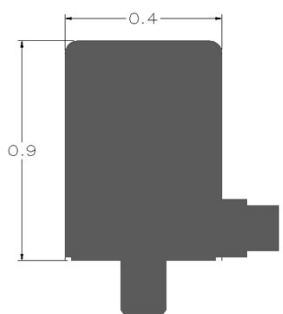
Grounding:

- (A) Case ground. Need to use an alumina disk to isolate from mounting surface in application.
- (B) Case grounded and isolated from mounting surface.

*This is the Frequency Range that the Sensor has the highest sensitivity. However, the Sensor can operate in other frequencies. Please consult the calibration certificate of the sensor or MISTRAS customer service or sales department for further information.

A3 Sensor

Very Low Frequency Sensor

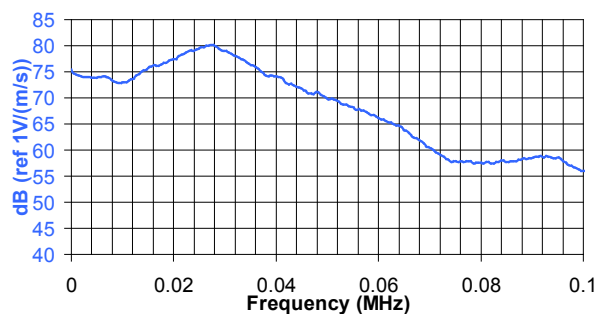


DESCRIPTION AND FEATURES

The A3 is a very low frequency narrow band, industrial sensor with a good sensitivity. It has a good frequency response over the range of 15 – 55 kHz. It is built for industrial applications that need rugged sensors to withstand the harsh operational conditions. The sensor features 304 stainless steel body with a mounting stud and microdot connector exiting on the side and an epoxy seal. The sensor can be easily mounted with a 10-32 stud mount at the bottom.

APPLICATIONS

This sensor is well suited for leak detection, structural health monitoring, vibrating structures, industrial equipment, etc.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	83 dB
Peak Sensitivity, Ref V/ μ bar.....	-71 dB
Operating Frequency Range.....	15-55 kHz
Resonant Frequency, Ref V/(m/s).....	30 kHz
Resonant Frequency, Ref V/ μ bar.....	35 kHz
Directionality.....	± 1.5 dB

Environmental

Temperature Range -65 to 177°C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....	0.4"OD X 0.9"H
	16 mm OD X 23 mm H
Weight.....	31 grams
Case Material.....	Stainless steel
Face Material.....	Stainless steel
Connector.....	Microdot
Connector Locations.....	Side

ORDERING INFORMATION AND ACCESSORIES

A3	A3
Cable (specify length in 'XX' m at end of PN)	1 m
Preamp to System Cable (Specify length in m)	1232-1
Preamplifier	0/2/4, 2/4/6
Amplifier subsystems ... AE2A, AE5A or standard AE systems	

Sensors include

NIST Calibration Certificate & Warranty



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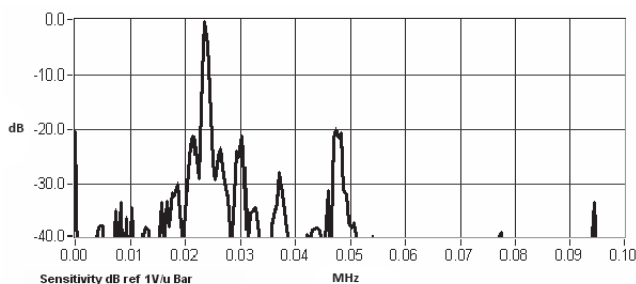
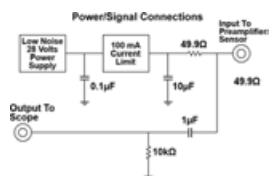
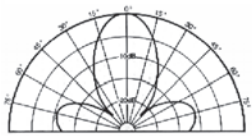
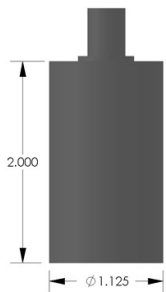
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PRODUCT DATA SHEET

AM2I Sensor

Airborne Sensor



DESCRIPTION AND FEATURES

The AM2I Sensor is a rugged, high sensitivity airborne, AE Transducer with its peak sensitivity at around 23 kHz. The narrow frequency response reduces noise and increases signal to noise ratio. The sensor's enclosed diaphragm design ensures a high sensitivity and protects the sensing element from the environment. The sensor has a 40 dB preamplifier inside its cavity. It can be connected to PAC standard AE data acquisition systems just like other PAC AE Sensors, using phantom power (where power supply input and sensor output signal are combined on the co-ax center conductor).

APPLICATIONS

The sensor is typically used in airborne leak detection applications. It may also be used to monitor other types of faults and failure conditions that emit airborne ultrasonic sound at or very near the sensor's resonant frequency.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/ μ bar -3 dB
 Operating Frequency Range 22-25 KHz
 Resonant Frequency, Ref V/(m/s); [V/ μ bar] 23 kHz
 Total Beam Angle (-3 dB points) 35°

Environmental

Temperature Range -25 to 75°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 1.13" OD X 2.0" H
 29 mm OD X 51 mm H
 Weight 81 grams
 Case Material Stainless Steel
 Connector BNC
 Seal Epoxy

Electrical

Input Voltage 16-29 VDC
 Operating/Max Current 20/120 mA
 Internal Preamp Gain 40 dB
 Noise RTI (referred to input μ V) < 2.4

ORDERING INFORMATION AND ACCESSORIES

AM2I AM2I
 Cable (specify length in 'XX' m at end of PN) 1234-X
 Preamp to System Cable (specify length in 'm') 1234-X
 Amplifier Subsystems AE2A

Sensors include

NIST Calibration Certificate & Warranty



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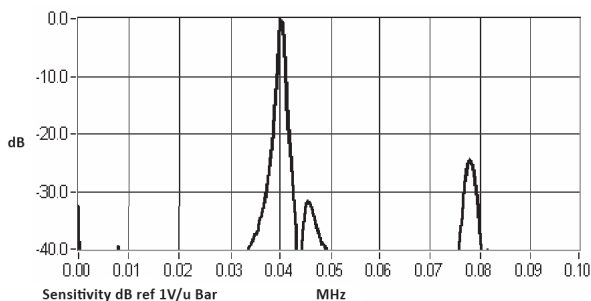
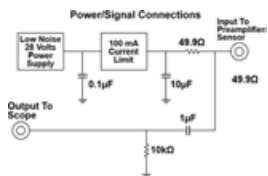
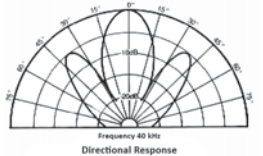
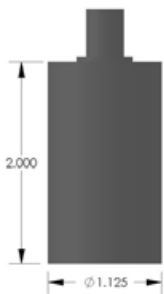
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PRODUCT DATA SHEET

AM4I Sensor

Airborne Sensor



DESCRIPTION AND FEATURES

The AM4I Sensor is a rugged, high sensitivity airborne, AE Transducer with its peak sensitivity at around 40 kHz. The narrow frequency response reduces noise and increases signal to noise ratio. The sensor's enclosed diaphragm design ensures a high sensitivity and protects the sensing element from the environment. The sensor has a 40 dB preamplifier inside its cavity. It can be connected to PAC standard AE Data Acquisition Systems just like other PAC AE Sensors, using phantom power (where power supply input and sensor output signal are combined on the co-ax center conductor).

APPLICATIONS

The sensor is typically used in airborne leak detection applications. It may also be used to monitor other types of faults and failure conditions that emit airborne ultrasonic sound at or very near the sensor's resonant frequency.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/μbar 0 dB
 Operating Frequency Range 39-42 KHz
 Resonant Frequency, Ref V/(m/s); [V/μbar] 40 kHz
 Total Beam Angle (-3 dB points) 20°

Environmental

Temperature Range -25 to 75°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 1.13" OD X 2.0" H
 29 mm OD X 51 mm H
 Weight 81 grams
 Case Material Stainless Steel
 Connector BNC
 Seal Epoxy

Electrical

Input Voltage 16-29 VDC
 Operating/Max Current 20/120 mA
 Internal Preamp Gain 40 dB
 Noise RTI (referred to input μV) < 2.4

ORDERING INFORMATION AND ACCESSORIES

AM4I AM4I
 Cable (specify length in 'XX' m at end of PN) 1234-X
 Preamp to System Cable (specify length in 'm') 1234-X
 Amplifier Subsystems AE2A

Sensors include

NIST Calibration Certificate & Warranty



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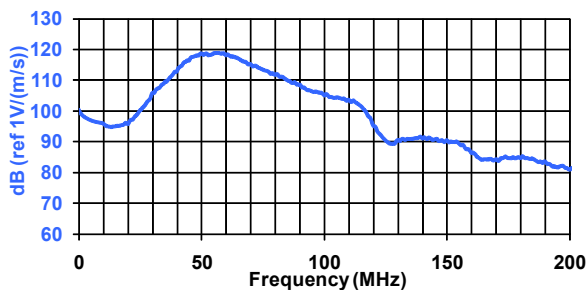
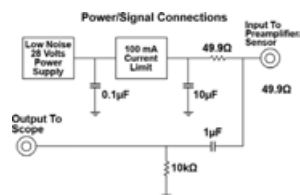
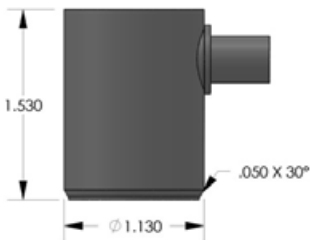
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PRODUCT DATA SHEET

CH6I Sensor

Low Frequency & Low Noise Integral Preamp Sensor



DESCRIPTION AND FEATURES

The CH6I sensor is a low frequency, resonant, acoustic emission sensor with an integral, low noise, filtered, 40 dB preamplifier, that can drive up to 3000 feet of cable. The sensor comes standard with PAC's unique "Auto Sensor Test" (AST*) function.

The CH6I features a strong, insulated, lightweight, aluminum alloy, integrated body structure that is color-coded green to identify the sensor model. This sensor's outside shell is anodized, providing a nonconductive finish to prevent any possible electric shorts from metal testing structures. It is the same size and has the same frequency response and sensitivity as the older R6I sensor. The EMI shielding ability of the CH6I has been improved by more than 300% compared with previous versions.

APPLICATIONS

- Metal, concrete and composite structures that require an AE sensor response below 100 kHz
- Ideal for fiberglass structure tests (i.e. bucket trucks, storage tanks)
- Pipeline testing, where long distance sensor monitoring is a must
- Leak detection for large sensor spacing

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	117 dB
Peak Sensitivity, Ref V/μbar.....	-23 dB
Operating Frequency Range.....	40-100 kHz
Resonant Frequency, Ref V/(m/s).....	55 kHz
Resonant Frequency, Ref V/μbar.....	98 kHz
Directionality.....	+/-1.5 dB

Electrical

Gain.....	40 dB
Power Requirements.....	16-30 Vdc @ 25 mA
Dynamic Range.....	>80 dB
Output Voltage.....	20 V peak to peak
Noise Level (RMS tri).....	<2.4 μV
Output Drive Impedance.....	50 Ω
Sensor Drive Capability.....	up to 3000 ft (1000 m)
AST Pulse.....	24 V, 3 microseconds into crystal
Grounding.....	Case grounded, isolated from sensing face

Environmental

Temperature Range.....	-35 to 75°C
Shock Limit.....	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	1.13"OD X 1.54"H
	29 mm OD X 39.2 mm H
Weight.....	56 grams
Case Material.....	Green color, anodized aluminum alloy
Face Material.....	Ceramic
Connector.....	BNC
Connector Locations.....	Side
Seal.....	Epoxy
Matching Cable.....	1234-X

ORDERING INFORMATION AND ACCESSORIES

Cable (specify length in 'XX' m at end of PN).....	1234 - X
Magnetic Hold-Down.....	MHR6I
Amplifier Subsystems.....	AE2A

Sensors include

NIST Calibration Certificate & Warranty



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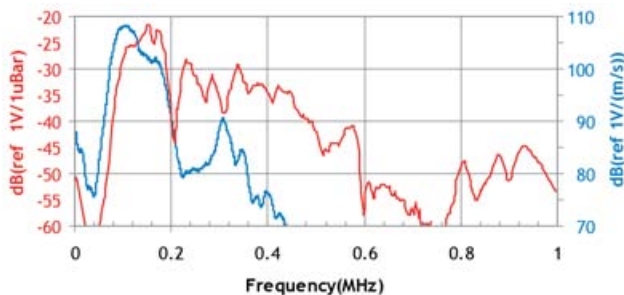
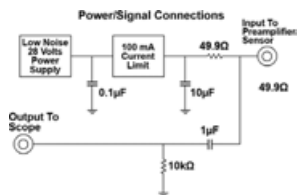
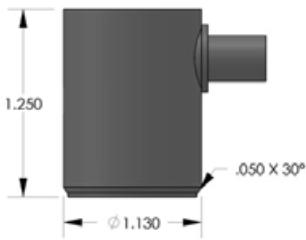
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PRODUCT DATA SHEET

CH15I Sensor

Integral Preamplifier Sensor



DESCRIPTION AND FEATURES

The CH15I sensor is a medium frequency, resonant, acoustic emission sensor with an integral, low noise, filtered, 40 dB preamplifier that can drive up to 1000 feet of cable. The sensor comes standard with PAC's unique "Auto Sensor Test" (AST*) function.

The CH15I features a strong, insulated, lightweight, aluminum alloy, integrated body structure that is color-coded blue to identify the sensor model. This sensor's outside shell is anodized, providing a nonconductive finish to prevent any possible electric shorts from metal testing structures. It is the same size and has the same frequency response and sensitivity as the R15I sensor, but the EMI shielding ability of the CH15I has been improved by more than 300% compared with previous versions.

APPLICATIONS

- Metals
- Bucket trucks
- Compressed gas cylinders
- Pressure vessels
- Cranes
- Structures

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	109 dB
Peak Sensitivity, Ref V/µbar	-22 dB
Operating Frequency Range	100-200 kHz
Resonant Frequency, Ref V/(m/s)	75 kHz
Resonant Frequency, Ref V/µbar	150 kHz
Directionality	+/-1.5 dB

Electrical

Gain	40 dB
Power Requirements	16-30 Vdc @ 25 mA
Dynamic Range	>80 dB
Output Voltage	20 V peak to peak
Noise Level (RMS RTI)	<2.4 µV
Output Drive Impedance	50 Ω
Sensor Drive Capability	up to 1000 ft (300 m)
AST Pulse	24 V, 3 microseconds into crystal
Grounding	Case grounded, isolated from sensing face

Environmental

Temperature Range	-35 to 75°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	1.13"OD X 1.28"H
	29 mm OD X 32.6 mm H
Weight	51 grams
Case Material	Blue color, anodized aluminum alloy
Face Material	Ceramic
Connector	BNC
Connector Locations	Side
Seal	Epoxy
Matching Cable	1234-X

ORDERING INFORMATION AND ACCESSORIES

CH15I	CH15I
Cable (specify length in 'XX' m at end of PN)	1234 - X
Magnetic Hold-Down	MHR15I
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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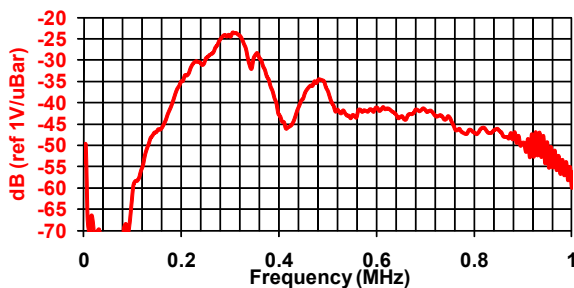
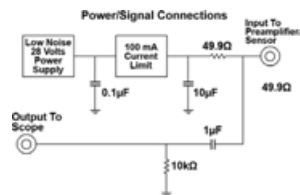
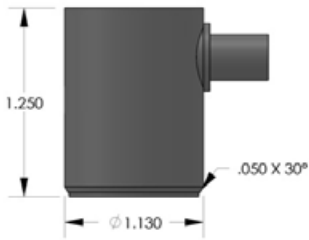
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PRODUCT DATA SHEET

CH30I Sensor

Medium Frequency & Low Noise Integral Preamp Sensor



DESCRIPTION AND FEATURES

The CH30I sensor is a medium frequency, resonant, acoustic emission sensor with an integral, low noise, filtered, 40 dB preamplifier that can drive up to 500 feet of cable. The sensor comes standard with PAC's unique "Auto Sensor Test" (AST*) function.

The CH30I features a strong, insulated, lightweight, aluminum alloy, integrated body structure that is color-coded purple to identify the sensor model. This sensor's outside shell is anodized, providing a nonconductive finish to prevent any possible electric shorts from metal testing structures. It is the same size and has the same frequency response and sensitivity as the R30I sensor, but the EMI shielding ability of the CH30I has been improved by more than 300% compared with previous versions.

APPLICATIONS

- Normally chosen for use in noisy environments
- Pipeline test with flow noise
- Steel structure highway bridges with low frequency road and wind noises

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	97 dB
Peak Sensitivity, Ref V/µbar	-22 dB
Operating Frequency Range	125-450 kHz
Resonant Frequency, Ref V/(m/s)	300 kHz
Resonant Frequency, Ref V/µbar	350 kHz
Directionality	+/-1.5 dB

Electrical

Gain	40 dB
Power Requirements	16-30 Vdc @ 25 mA
Dynamic Range	>80 dB
Output Voltage	20 V peak to peak
Noise Level (RMS tri)	<2.4 µV
Output Drive Impedance	50 Ω
Sensor Drive Capability	up to 500 ft (166 m)
AST Pulse	24 V, 3 microseconds into crystal
Grounding	Case grounded, isolated from sensing face

Environmental

Temperature Range	-35 to 75°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	1.13"OD X 1.28"H 29 mm OD X 32.6 mm H
Weight	45 grams
Case Material	Purple color, anodized aluminum alloy
Face Material	Ceramic
Connector	BNC
Connector Locations	Side
Seal	Epoxy
Matching Cable	1234-X

ORDERING INFORMATION AND ACCESSORIES

Cable (specify length in 'XX' m at end of PN)	1234 - X
Magnetic Hold-Down	MHR30I
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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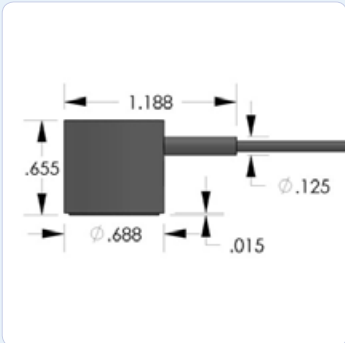
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PRODUCT DATA SHEET

D9202B Sensor

Wideband Differential Sensor



DESCRIPTION AND FEATURES

D9202B is a wideband differential sensor with a very high sensitivity. It has a very good frequency response over the range of 400 – 800 kHz. Differential sensors differ from their general purpose counterparts by employing two sensing elements with opposite polarization directions. The two signal leads feed into a differential pre-amplifier which eliminates common-mode noise resulting in a lower noise output from the pre-amplifier. Noise improvements to the tune of 2 dB can be achieved using differential sensors over a single ended sensor. This sensor features a rugged steel construction with an integrated twin axial cable exiting on the side.

APPLICATIONS

Differential sensors are used in environments where very low level AE signals need to be processed, they are particularly useful in environments with high background noise. This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. Wideband sensors are well suited for research applications where a high fidelity AE response is required. It can be easily mounted using epoxy.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 55 dB
 Peak Sensitivity, Ref V/ μ bar -53 dB
 Operating Frequency Range 400-800 kHz
 Resonant Frequency, Ref V/(m/s) 475 kHz
 Resonant Frequency, Ref V/ μ bar 575 kHz
 Directionality +/-1.5 dB

Environmental

Temperature Range -65 to 125°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

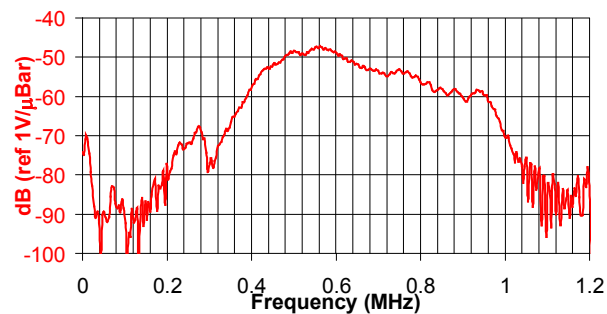
Dimensions 0.7" OD X 0.65" H
 18 mm OD X 17 mm H
 Weight 8 grams
 Case Material Stainless steel
 Face Material Ceramic
 Connector BNC
 Connector Locations Side

ORDERING INFORMATION AND ACCESSORIES

D9202B D9202B
 Cable (specify length in 'XX' m at end of PN) 1 m
 Cable (Pre-amplifier to system) 1234-X
 Magnetic Hold-Down MHSTD
 Amplifier Subsystems AE2A/AE5A
 Pre-Amplifier 0/2/4, 2/4/6, ILD40

Sensors include

NIST Calibration Certificate & Warranty



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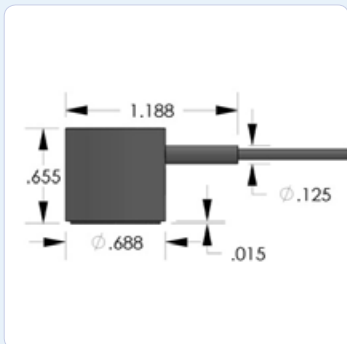
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PRODUCT DATA SHEET

D9203B Sensor

Wideband Differential Sensor



DESCRIPTION AND FEATURES

D9203B is a wideband differential sensor with a very high sensitivity and bandwidth. It has a very good frequency response over the range of 150 – 900 kHz. Differential sensors differ from their general purpose counterparts by employing two sensing elements with opposite polarization directions. The two signal leads feed into a differential pre-amplifier which eliminates common-mode noise resulting in a lower noise output from the pre-amplifier. Noise improvements to the tune of 2 dB can be achieved using differential sensors over a single ended sensor. This sensor features a rugged steel construction with an integrated twin axial cable exiting on the side.

APPLICATIONS

Differential sensors are used in environments where very low level AE signals need to be processed, they are particularly useful in environments with high background noise. This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. Wideband sensors are well suited for research applications where a high fidelity AE response is required. It can be easily mounted using epoxy.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 65 dB
 Peak Sensitivity, Ref V/ μ bar -60 dB
 Operating Frequency Range 150-900 kHz
 Resonant Frequency, Ref V/(m/s) 175 kHz
 Resonant Frequency, Ref V/ μ bar 500 kHz
 Directionality +/-1.5 dB

Environmental

Temperature Range -65 to 125°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

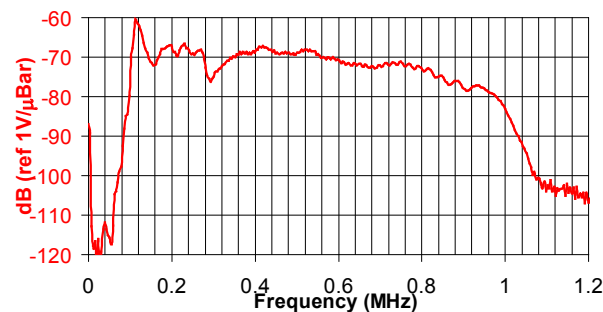
Dimensions 0.7" OD X 0.65" H
 18 mm OD X 17 mm H
 Weight 8 grams
 Case Material Stainless steel
 Face Material Ceramic
 Connector BNC
 Connector Locations Side

ORDERING INFORMATION AND ACCESSORIES

D9203B D9203B
 Cable (specify length in 'XX' at end of PN) 1 m
 Cable (Pre-amplifier to system) 1234-X
 Magnetic Hold-Down MHSTD
 Amplifier Subsystems AE2A, AE5A
 Pre-Amplifier 0/2/4, 2/4/6

Sensors include

NIST Calibration Certificate & Warranty



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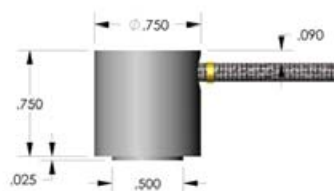
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PRODUCT DATA SHEET

D9215 Sensor

High Temperature Sensor

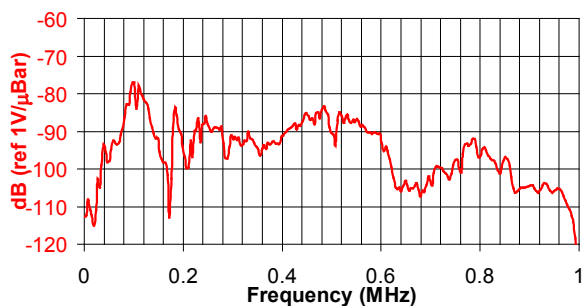


DESCRIPTION AND FEATURES

The D9215 is a high temperature radiation resistant differential sensor, specially designed for the nuclear power industry. The differential inputs give the sensors a capability to operate even in extremely noisy environments, the differential signals eliminate the common mode noise at the preamplifier improving the signal to noise ratio to the tune of 2 dB or higher. The sensor features a rugged cavity made from Inconel 600 and an integral 2 ft long "hard-line" cable. The hardline cable is crimped to a softline twinaxial cable made from Tefzel interfaces the sensor to instrumentation. The sensor is tightly sealed by welding for use in harsh nuclear environment. The sensor has a 100 kHz resonance frequency and 80 kHz to 560 kHz bandwidth. All the materials used in this sensor have been proven for use in nuclear environments. The Maximum operating temperature of the sensor is 540°C and the softline cable can be operated at a maximum temperature of 150°C.

APPLICATIONS

The sensor is suitable for use in high temperature radiation environments such as in Nuclear Power Plants. They can be used for monitoring high temperature equipment in power plants, aerospace engine monitoring, pipelines etc.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	52 dB
Peak Sensitivity, Ref V/μbar	-82 dB
Operating Frequency Range	50-650 KHz
Resonant Frequency, Ref V/(m/s)	60 dB
Resonant Frequency, Ref V/μbar	100 KHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range	-65 to 540°C
Relative Humidity	90%
Shock Limit	10,000 g
Gamma ray 40 yr integrated dose (rads)	1x10 ⁹
Neutron flux 40 yr integrated dose (n/cm ²)	2.23x10 ¹⁷

Physical

Dimensions	0.8" OD X 0.8" H
	20 mm OD X 20 mm H
Weight	60 grams (with hardline and w/o softline)
Case Material	Inconel 600
Face Material	Inconel 600
Connector	Dual BNC on softline
Connector Locations	Side
Seal	Welding
Impedance (between lead and ground)	>20 MΩ

ORDERING INFORMATION AND ACCESSORIES

D9215	D9215
Cable (specify length in 'XX' m at end of PN)	1234-X
Pre-amplifier	2/4/6, 1220
Preamp to System Cable (specify length in 'm')	1234-X
Amplifier Subsystems	AE2A, AE5A
Other IS Sensors are available with various resonant frequencies.	

Sensors include

NIST Calibration Certificate & Warranty



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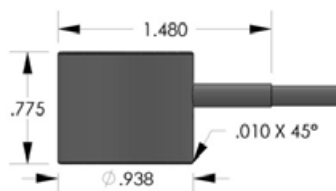
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PRODUCT DATA SHEET

D9241A Sensor

30 kHz Frequency Acoustic Emission Sensor



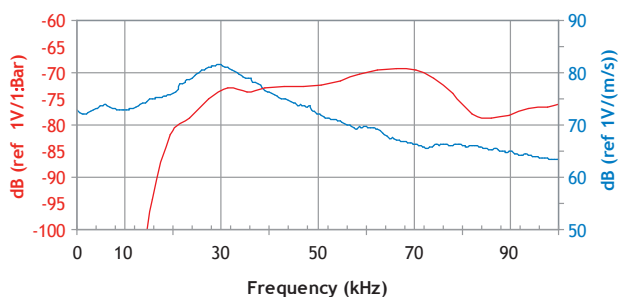
DESCRIPTION AND FEATURES

The D9241A is a high sensitivity, low resonance frequency, low noise sensor with a differential output. It has very good EMI shielding ability.

Featuring a rugged stainless steel cavity, ceramic face, and integral cable with differential BNC connector, the D9241A provides high common noise rejection and low noise, even in electrically noisy environments.

APPLICATIONS

The sensor can be used in any place that requires a sensor having very good EMI shielding, low frequency and high sensitivity. One of typical application for the sensor is to monitor big power transformers.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	82 dB
Operating Frequency Range	20-60 kHz
Resonant Frequency, Ref V/(m/s)	30 kHz
Directionality	N/A

Environmental

Temperature Range -65 to 177°C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....	0.936" OD X 0.788"H
	23.77 mm OD X 20.01 mm H
Weight.....	56 grams
	80 grams with 1 meter cable & connector
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector.....	BNC Differential
Connector Locations.....	Side
Seal.....	Epoxy
Sensor to Preamp Cable (1 meter).....	Integral

ORDERING INFORMATION AND ACCESSORIES

D9241A.....	D9241A
Magnetic Hold-Down	MHD9241A
Amplifier subsystems ... AE2A, AE5A or standard AE systems	
Preamplifier.....	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234 - X

Sensors include

NIST Calibration Certificate & Warranty



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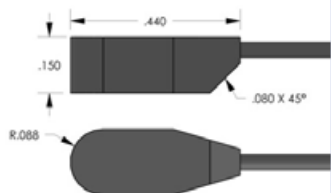
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HD2WD Sensor

Very Wideband Frequency Miniature Sensor

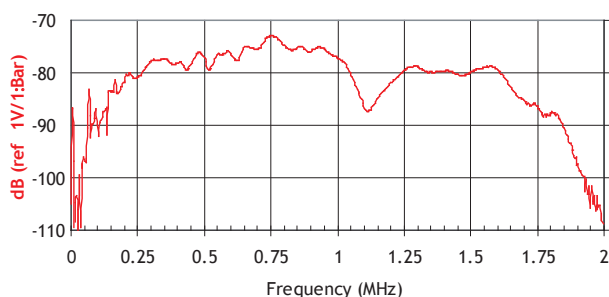


DESCRIPTION AND FEATURES

The HD2WD miniature sensor has a very wideband and flat frequency response over the range of 250 – 1600 kHz. Its small size makes the sensor an ideal candidate for computer hard disk examination and other applications requiring a small, wideband AE sensor response. A small diameter, integral coax cable exits from the side of the sensor with a BNC connector on the end.

APPLICATIONS

Wideband sensors are typically used in research applications or other applications where a high fidelity AE response is required. In research applications, wideband AE sensors are useful where frequency analysis of the AE signal is needed and in helping determine the predominant frequency band of AE sources for noise discrimination and selection of a suitable lower cost, general purpose AE sensor. Due to its extremely small size, this sensor is ideal for applications such as hard disk monitoring, where small size and low mass sensors are required.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/ μ bar	-70 dB
Operating Frequency Range	330-1850 kHz
Resonant Frequency	N/A
Directionality	N/A

Environmental

Temperature Range -65 to 125°C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....0.175"OD X 0.14"H X 0.44" L
4.44 mm OD X 2.4 mm H X 11.17 mm L
Weight 2.5 grams (5.5 grams with cable & connector)
Case Material..... Aluminum Alloy
Face Material..... Aluminum Alloy
Connector..... BNC on integral cable
Seal..... Epoxy
Sensor to Preamp Cable Integral 24"

ORDERING INFORMATION AND ACCESSORIES

HD2WD.....	HD2WD
Cable (specify length in '-XX' m at end of PN)	1 m
Pre-amplifier.....	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234 - X
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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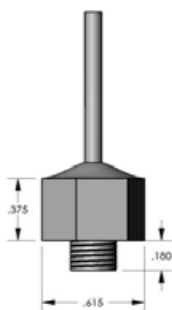
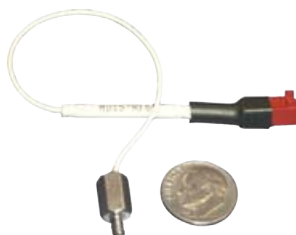
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HD15 Sensor

Low Frequency Miniature Sensor

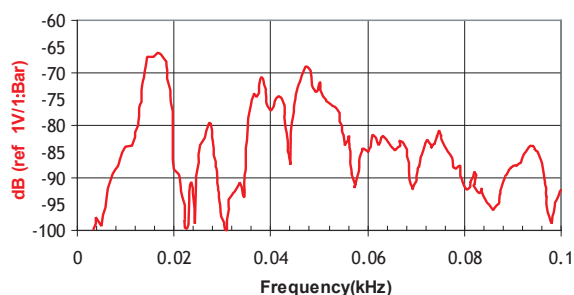


DESCRIPTION AND FEATURES

The HD15 is a very small Acoustic Emission sensor that is built within a Hex 6-32 threaded standoff for easy mounting. Offering low frequency and high sensitivity AE response, it comes standard with an 8-inch integral cable and choice of BNC or SMA connector.

APPLICATIONS

This miniature sensor is ideal for any application that requires a small, low frequency and threaded AE sensor mounting. It is especially useful where there is little room for sensor mounting.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/ μ bar	-66 dB
Operating Frequency Range	100-450 kHz
Resonant Frequency, Ref V/ μ bar	150 kHz
Directionality	N/A

Environmental

Temperature Range -65 to 125°C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....0.313"OD X 0.375"H
0.18" thread height with 6-32 thread
(8 x 9.5 mm, 4.5 mm thread height with 6-32 thread)
Weight 3 grams (6 grams w/cable & connector)
Case Material..... Stainless Steel
Connector..... BNC, SMA on Integral Cable
Connector Locations..... Top Exit Coax,
.06" diameter and 8" long

ORDERING INFORMATION AND ACCESSORIES

HD15.....	HD15
Preamplifier.....	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm').....	1234 - X
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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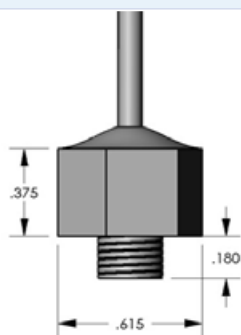
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HD50 Sensor

Very Wideband Frequency Miniature Sensor

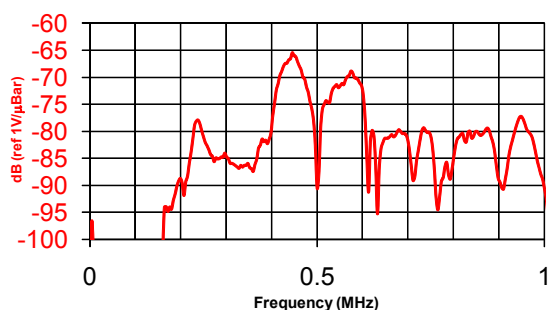


DESCRIPTION AND FEATURES

The HD50 is a very small sensor built within a Hex 4-40 threaded standoff. The HD50 offers an medium resonant frequency and high sensitivity AE response. Its small size and AE response makes it an ideal candidate for computer hard disk examination and other applications that requiring a small, medium frequency sensor. It has an integral cable with a BNC or SMA connector on the end.

APPLICATIONS

The sensor can be used in any application requiring a small, medium frequency response and threaded AE sensor mounting. It is especially useful where there is little room for sensor mounting.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/ μ bar	-70 dB
Operating Frequency Range	400-750 kHz
Resonant Frequency, Ref V/ μ bar	500 kHz
Directionality	N/A

Environmental

Temperature Range -65 to 125°C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions..... 0.25"OD X 0.56"H
20.6 mm OD X 27 mm H

Weight..... 1 gram

Case Material..... Brass

Face Material..... Brass

Connector..... BNC or SMA

Connector Locations..... Top

ORDERING INFORMATION AND ACCESSORIES

HD50.....	HD50
Preamplifier.....	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm').....	1234 - X
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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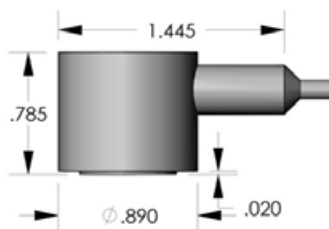
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ISD9203B Sensor

Wideband Frequency, Intrinsically Safe Sensor



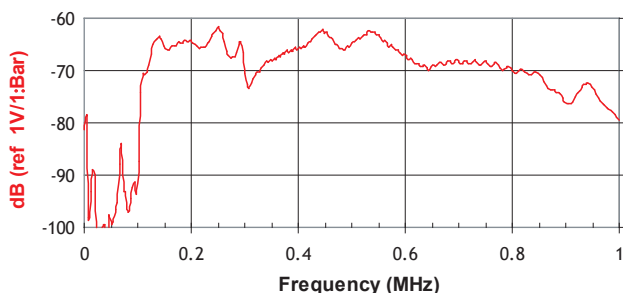
DESCRIPTION AND FEATURES

The ISD9203B is a wideband frequency sensor that was designed specially to meet Intrinsic Safety (IS) and IP65 environmental requirements. Certified as Intrinsically Safe (IS) for use with our 1276-2 IS preamplifier and 1276-1 and 1278 IS ASL-C subsystem, this sensor has a thicker ceramic wear-plate and an epoxy coating completely covering the sensor and cable exit. An IS voltage protection circuit is built into the sensor.

It has an integrated one-meter long differential cable with extruded TPE jacket and a pigtail for connecting into a 1276 or 1278 IS Preamplifier or Subsystem. The sensor has similar frequency response as the D9203B sensor. Its maximum operating temperature is 125°C.

APPLICATIONS

Wideband sensors are typically used in research applications or other applications where a high fidelity AE response is required. In research applications, wideband AE sensors are useful where frequency analysis of the AE signal is required and in helping determine the predominant frequency band of AE sources for noise discrimination and selection of a suitable lower cost, general purpose AE sensor. In high fidelity applications, various AE wavemodes can be detected using wideband sensors, providing more information about the AE source and distance of the AE event.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	65 dB
Peak Sensitivity, Ref V/ μ bar	-60 dB
Operating Frequency Range	150-850 KHz
Resonant Frequency, Ref V/(m/s)	175 dB
Resonant Frequency, Ref V/ μ bar	500 KHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range	-45 to 125°C
Shock Limit	1,000 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.89" OD X 0.755" H
	22.6 mm OD X 19.2 mm H
Weight	27 grams with 1 meter cable
Case Material	Stainless steel/Epoxy
Face Material	Ceramic
Connector	Pigtail
Connector Locations	Side
Seal	Epoxy
Sensor to Preamp Cable (1 meter)	Integral

Certifications

ATEX Certified

ORDERING INFORMATION AND ACCESSORIES

ISD9203B	ISD9203B
Pre-amplifier	1276-2
ASL-4-20 ma Subsystem	1276-1
Preamp to System Cable (specify length in 'm')	1276C
IS Zener Barrier	1276B
Other IS Sensors are available with various resonant frequencies.	

Sensors include

NIST Calibration Certificate & Warranty



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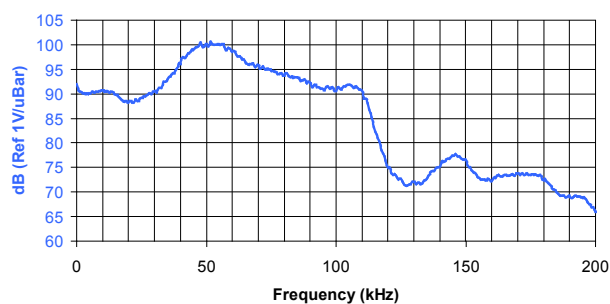
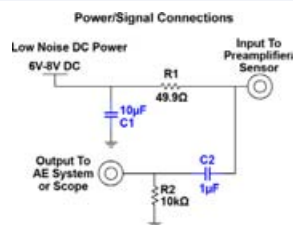
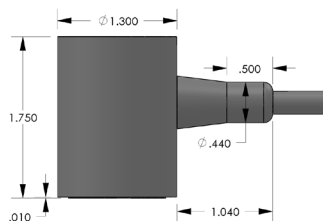
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ISPK6IUC Sensor

Intrinsically Safe Underwater Sensor



DESCRIPTION AND FEATURES

The ISPK6IUC is a low frequency, resonant acoustic emission sensor with an integral cable. It is designed to meet the intrinsic safety (IS) requirements and can operate in underwater conditions. The sensor features a 26 dB low power, low noise preamplifier that can drive up to 200 meters of cable. The special polymer coatings on the sensor along with an integral waterproof cable make it 100% insulated and non-conductive. The sensor can be used to depths of 1000 psi.

APPLICATIONS

The sensor can be readily used for structural health monitoring in environments requiring intrinsic safety. It can be used for the monitoring of structures like pipelines, pressure vessels and storage tanks in petroleum refineries, chemical plants and offshore platforms.

PRODUCT DATA SHEET

Dynamic

Peak Sensitivity, Ref V/(m/s).....	101 dB
Operating Frequency Range	30-100 kHz
Resonant Frequency, Ref V/(m/s)	60 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range -40 to 70°C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions..... 1.31"OD X 1.75"H
33 mm OD X 45 mm H
Weight.....98 grams
Case Material..... Stainless Steel/Epoxy
Face Material..... Ceramic
Connector..... BNC on integral cable
Connector Locations.....Side

Electrical

Gain	26 dB
Preamp DC power	5-7 V
Grounding.....	Isolated from mounting surface
Noise level at input.....	<3 μ V
Preamplifier dynamic range	>87 dB
Preamplifier impedance	50 ohm

Certifications

II 1 G, Ex ia IIC T4

ORDERING INFORMATION AND ACCESSORIES

ISPK6IUC.....	ISPK6IUC
Cable (specify length in '-XX' m)	XX
IS Zener Barrier/Preamplifier Interface	1281

Sensors include

NIST Calibration Certificate & Warranty



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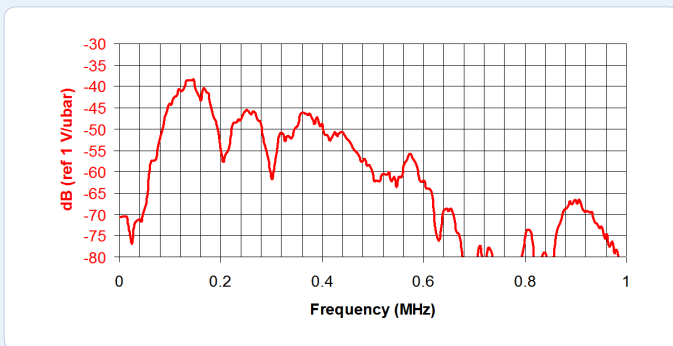
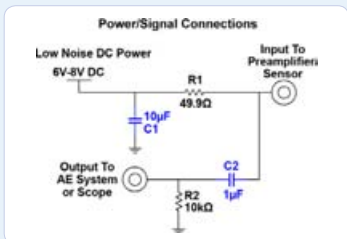
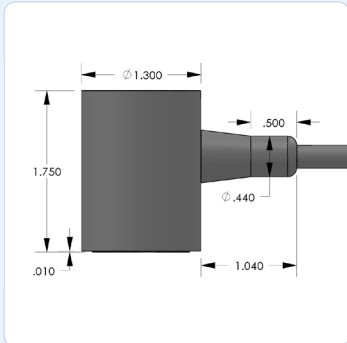
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PRODUCT DATA SHEET

ISPK15IUC Sensor

Intrinsically Safe Underwater Sensor



DESCRIPTION AND FEATURES

The ISPK15IUC is a medium frequency, resonant acoustic emission sensor with an integral cable. It is designed to meet the intrinsic safety (IS) requirements and can operate in underwater conditions. The sensor features a 26 dB low power, low noise preamplifier that can drive up to 200 meters of cable. The special polymer coatings on the sensor along with an integral waterproof cable make it 100% insulated and non-conductive. The sensor can be used to depths of 1000 psi.

APPLICATIONS

The sensor can be readily used for structural health monitoring in environments requiring intrinsic safety. It can be used for the monitoring of structures like pipelines, pressure vessels and storage tanks in petroleum refineries, chemical plants and offshore platforms.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 94 dB
 Peak Sensitivity, Ref V/μbar -37 dB
 Operating Frequency Range 50-400 kHz
 Resonant Frequency, Ref V/(m/s) 75 kHz
 Resonant Frequency, Ref V/μbar 150 kHz
 Directionality +/-1.5 dB

Environmental

Temperature Range -40 to 70°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 1.31" OD X 1.75" H
 33 mm OD X 45 mm H
 Weight 98 grams
 Case Material Stainless Steel/Epoxy
 Face Material Ceramic
 Connector BNC on integral cable
 Connector Locations Side

Electrical

Gain 26 dB
 Preamp DC power 5-7 V
 Grounding Isolated from mounting surface
 Noise level at input <3 μV
 Preamplifier dynamic range >87 dB
 Preamplifier impedance 50 ohm

Certifications

II 1 G, Ex ia IIC T4

ORDERING INFORMATION AND ACCESSORIES

ISPK15IUC ISPK15IUC
 Cable (specify length in 'XX' m) XX
 IS Zener Barrier/Preamplifier Interface 1281

Sensors include

NIST Calibration Certificate & Warranty



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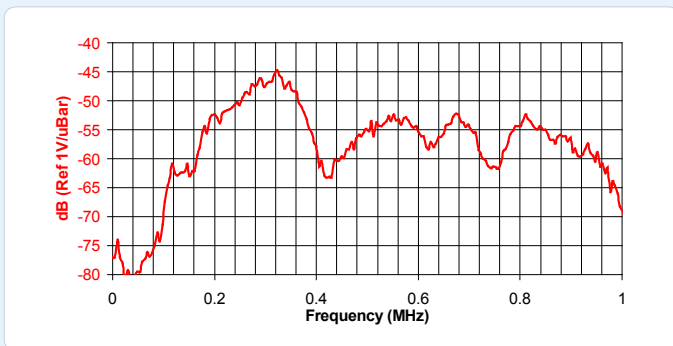
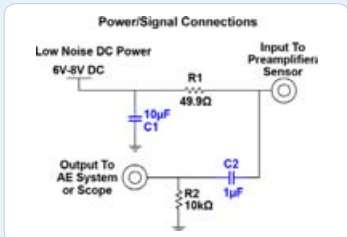
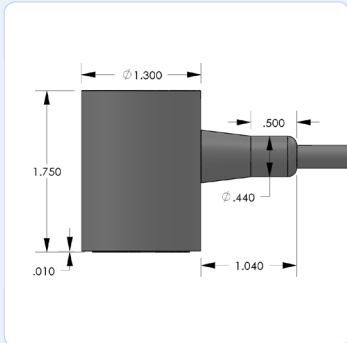
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PRODUCT DATA SHEET

ISPK30IUC Sensor

Intrinsically Safe Underwater Sensor



DESCRIPTION AND FEATURES

The ISPK30IUC sensor is a medium frequency sensor, resonant acoustic emission sensor with an integral cable. It is designed to meet the intrinsic safety (IS) requirements and can operate in underwater conditions. The sensor features a 26 dB low power, low noise preamplifier that can drive up to 200 meters of cable. The special polymer coatings on the sensor along with an integral waterproof cable make it 100% insulated and non-conductive. The sensor can be used to depths of 1000 psi.

APPLICATIONS

The sensor can be readily used for structural health monitoring in environments requiring intrinsic safety. It can be used for the monitoring of structures like pipelines, pressure vessels and storage tanks in petroleum refineries, chemical plants and offshore platforms.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	84 dB
Peak Sensitivity, Ref V/μbar	-44 dB
Operating Frequency Range	100-400 kHz
Resonant Frequency, Ref V/(m/s)	225 kHz
Resonant Frequency, Ref V/μbar	350 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-40 to 70°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	1.31" OD X 1.75" H 33 mm OD X 45 mm H
Weight	98 grams
Case Material	Stainless Steel/Epoxy
Face Material	Ceramic
Connector	BNC on integral cable
Connector Locations	Side

Electrical

Gain	26 dB
Preamp DC power	5-7 V
Grounding	Isolated from mounting surface
Noise level at input	<3 μV
Preamplifier dynamic range	>87 dB
Preamplifier impedance	50 ohm

Certifications

II 1 G, Ex ia IIC T4

ORDERING INFORMATION AND ACCESSORIES

ISPK30IUC	ISPK30IUC
Cable (specify length in 'XX' m)	XX
IS Zener Barrier/Preamplifier Interface	1281

Sensors include

NIST Calibration Certificate & Warranty



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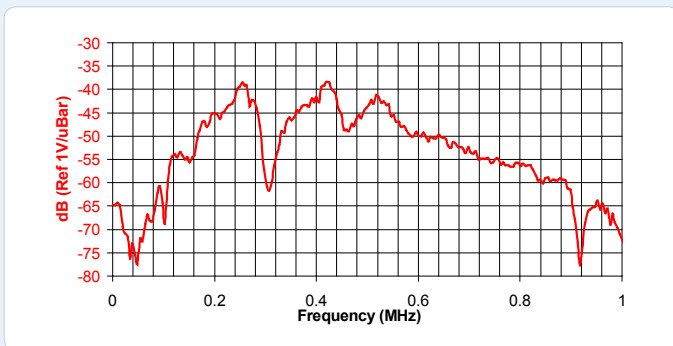
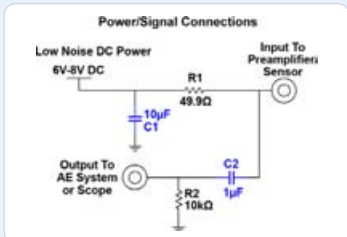
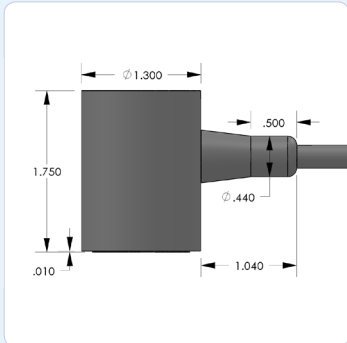
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PRODUCT DATA SHEET

ISPKWDIUC Sensor

Intrinsically Safe Underwater Sensor



DESCRIPTION AND FEATURES

The ISPKWDIUC is a wideband acoustic emission sensor with an integral cable. It is designed to meet the intrinsic safety (IS) requirements and can operate in underwater conditions. The sensor features a 26 dB low power, low noise preamplifier that can drive up to 200 meters of cable. The special polymer coatings on the sensor along with an integral waterproof cable make it 100% insulated and non-conductive. The sensor can be used to depths of 1000 psi.

APPLICATIONS

The sensor can be readily used for structural health monitoring in environments requiring intrinsic safety. It can be used for the monitoring of structures like pipelines, pressure vessels and storage tanks in petroleum refineries, chemical plants and offshore platforms.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 80 dB
 Peak Sensitivity, Ref V/μbar -38 dB
 Operating Frequency Range 100-800 kHz
 Resonant Frequency, Ref V/(m/s) 125 kHz
 Resonant Frequency, Ref V/μbar 530 kHz
 Directionality +/-1.5 dB

Environmental

Temperature Range -40 to 70°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 1.31"OD X 1.75"H
 33 mm OD X 45 mm H
 Weight 98 grams
 Case Material Stainless Steel/Epoxy
 Face Material Ceramic
 Connector BNC on integral cable
 Connector Locations Side

Electrical

Gain 26 dB
 Preamp DC power 5-7 V
 Grounding Isolated from mounting surface
 Noise level at input <3 μV
 Preamplifier dynamic range >87 dB
 Preamplifier impedance 50 ohm

Certifications

II 1 G, Ex ia IIC T4

ORDERING INFORMATION AND ACCESSORIES

ISPKWDIUC ISPKWDIUC
 Cable (specify length in 'XX' m) XX
 IS Zener Barrier/Preamplifier Interface 1281

Sensors include

NIST Calibration Certificate & Warranty



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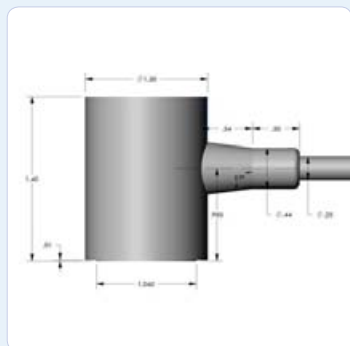
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ISR.45 Sensor

Intrinsically Safe Sensor



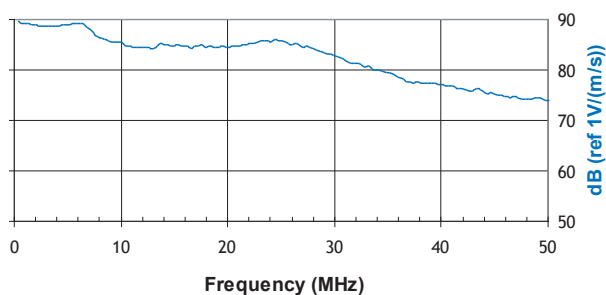
DESCRIPTION AND FEATURES

The ISR.45 is our lowest resonant frequency sensor designed specially to meet Intrinsic Safety (IS) and IP65 environmental requirements. Certified as Intrinsically Safe (IS) for use with our 1276-2 IS Preamplifier and 1276-1 and 1278 IS ASL-C Subsystem, this sensor has a thicker ceramic wear-plate and an epoxy coating completely covering the sensor and cable exit. An IS voltage protection circuit is built into the sensor.

It has an integrated one-meter long differential cable with extruded TPE jacket and a pigtail for connecting into a 1276 or 1278 IS Preamplifier or Subsystem. The sensor has similar frequency response as the R.45 sensor. Its maximum operating temperature is 125°C.

APPLICATIONS

This sensor is normally selected for structural health monitoring of large-scale concrete structures, geologic structures and for pipeline leak detection applications where large distances between sensors is required, where there is little acoustic background noise and where intrinsically safe sensors and instrumentation are required.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)..... 87 dB
Operating Frequency Range..... 3-30 KHz
Resonant Frequency..... 7 KHz
Directionality..... +/- 1.5 dB

Environmental

Temperature Range..... -45 to 125°C
Shock Limit..... 1,000 g
Waterproof..... IP66
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions..... 1.30"OD X 1.40"H
..... 33 mm OD X 36 mm H
Weight..... 155 grams with 1 meter cable
Case Material..... Stainless steel / Epoxy
Connector..... Pigtail
Connector Locations..... Side
Seal..... Epoxy
Sensor to Preamp Cable (1 meter)..... Integral

Certifications

ATEX Certified, II1, GD, EEx, ia, IIC T4

ORDERING INFORMATION AND ACCESSORIES

ISR.45..... ISR.45
Pre-amplifier..... 1276-2
ASL-4-20 ma Subsystem..... 1276-1
Preamp to System Cable (specify length in 'm')..... 1276C
IS Zener Barrier..... 1276B
Other IS Sensors are available with various resonant frequencies.

Sensors include

NIST Calibration Certificate & Warranty



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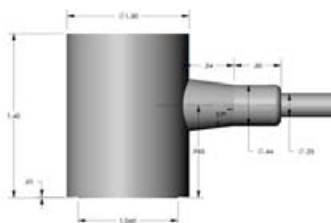
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ISR1.5 Sensor

Intrinsically Safe Sensor



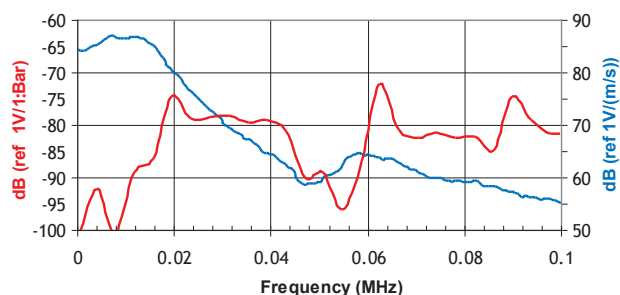
DESCRIPTION AND FEATURES

The ISR1.5 is a very low resonance frequency sensor that was designed specially to meet Intrinsic Safety (IS) and IP65 environmental requirements. Certified as Intrinsically Safe (IS) for use with our 1276-2 IS Preamplifier and 1276-1 and 1278 IS ASL-C Subsystem, this sensor has a thicker ceramic wear-plate and an epoxy coating completely covering the sensor and cable exit. An IS voltage protection circuit is built into the sensor.

It has an integrated one-meter long differential cable with extruded TPE jacket and a pigtail for connecting into a 1276 or 1278 IS Preamplifier or Subsystem. The sensor has similar frequency response as the R1.5 sensor. Its maximum operating temperature is 125°C.

APPLICATIONS

This sensor is normally selected for structural health monitoring of large-scale concrete structures, geologic structures and for concrete and metal pipeline leak detection applications, where intrinsically safe sensors and instrumentation are required, where large distances between sensors is required and there needs to be some acoustic background noise rejection.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	87 dB
Operating Frequency Range	5-20 KHz
Resonant Frequency	15 kHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range -45 to 125°C
Shock Limit 1,000 g
Waterproof IP66
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....	1.32"OD X 1.42"H
.....	33 mm OD X 36 mm H
Weight	120 grams with 1 meter cable
Case Material.....	Stainless steel/Epoxy
Face Material	Ceramic
Connector.....	Pigtail
Connector Locations.....	Side
Seal	Epoxy
Sensor to Preamp Cable (1 meter)	Integral

Certifications

ATEX Certified, II1, GD, EEx, ia, IIC T4

ORDERING INFORMATION AND ACCESSORIES

ISR1.5.....	ISR1.5
Pre-amplifier.....	1276-2
ASL-4-20 ma Subsystem	1276-1
Preamp to System Cable (specify length in 'm')	1276C
IS Zener Barrier.....	1276B
Other IS Sensors are available with various resonant frequencies.	

Sensors include

NIST Calibration Certificate & Warranty



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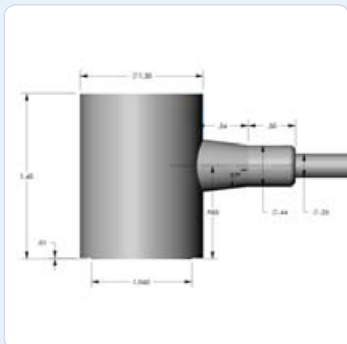
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PRODUCT DATA SHEET

ISR3 Sensor

Intrinsically Safe Sensor



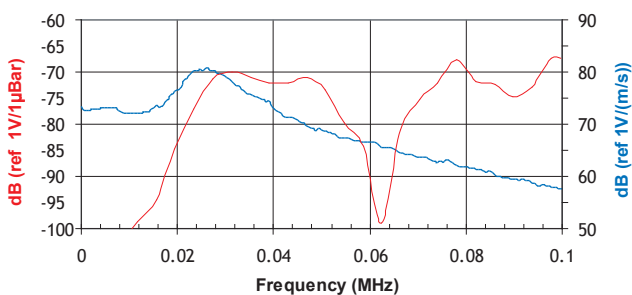
DESCRIPTION AND FEATURES

The ISR3 sensor was designed specially to meet Intrinsic Safety (IS) and IP65 environmental requirements. Certified as Intrinsically Safe (IS) for use with our 1276-2 IS preamplifier and 1276-1 and 1278 IS ASL-C subsystem, this sensor has a thicker ceramic wear-plate and an epoxy coating completely covering the sensor and cable exit. An IS voltage protection circuit is built into the sensor.

It has an integrated one-meter long differential cable with extruded TPE jacket and a pigtail for connecting into a 1276 or 1278 IS Preamplifier or Subsystem. The sensor has similar frequency response as the R3 sensor. Its maximum operating temperature is 125°C.

APPLICATIONS

This sensor is normally selected for structural health monitoring of large-scale concrete structures, geologic structures and for pipeline leak detection applications where large distances between sensors is required, where there is little acoustic background noise and where intrinsically safe sensors and instrumentation are required.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 8 dB
 Peak Sensitivity, Ref V/μbar -63 dB
 Operating Frequency Range 10-50 KHz
 Resonant Frequency, Ref V/μbar 29 KHz
 Directionality +/- 1.5 dB

Environmental

Temperature Range -45 to 125°C
 Shock Limit 1,000 g
 Waterproof IP66
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 1.32" OD X 1.42" H
 32 mm OD X 36 mm H
 Weight 50 grams with 1 meter cable
 Case Material Stainless steel/Epoxy
 Face Material Ceramic
 Connector Pigtail
 Connector Locations Side
 Seal Epoxy
 Sensor to Preamp Cable (1 meter) Integral

Certifications

ATEX Certified, II1, GD, EEx, ia, IIC T4

ORDERING INFORMATION AND ACCESSORIES

ISR3 ISR3
 Pre-amplifier 1276-2
 ASL-4-20 ma Subsystem 1276-1
 Preamp to System Cable (specify length in 'm') 1276C
 IS Zener Barrier 1276B
 Other IS Sensors are available with various resonant frequencies.

Sensors include

NIST Calibration Certificate & Warranty



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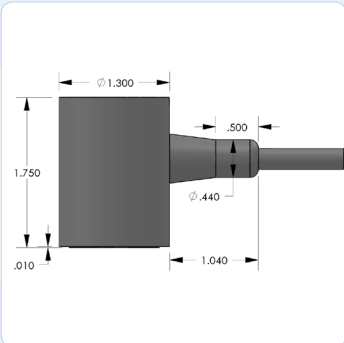
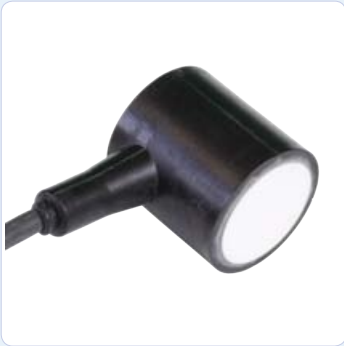
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PRODUCT DATA SHEET

ISR3CA-HT Sensor

Intrinsically Safe High Temperature Sensor

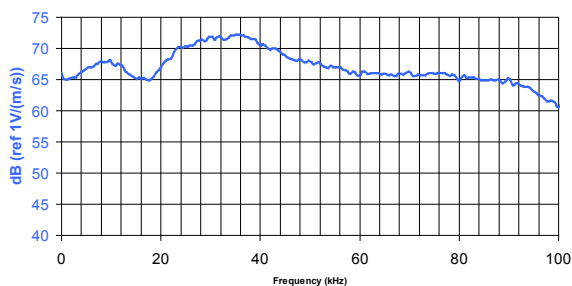


DESCRIPTION AND FEATURES

The ISR3CA-HT sensor is a low frequency sensor, resonant acoustic emission sensor with an integral cable. It is designed to meet the intrinsic safety (IS) and IP66 requirements and can operate at very high temperatures continuously. The special polymer coatings on the sensor along with an integral cable make it 100% insulated and non-conductive. The sensor can be used to temperatures of 150 C.

APPLICATIONS

The sensor can be readily used for structural health monitoring in harsh environments requiring intrinsic safety. It can be used for the monitoring of structures like pipelines, pressure vessels and storage tanks in petroleum refineries, chemical plants and offshore platforms.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)..... 72 dB
 Operating Frequency Range 10-100 kHz
 Resonant Frequency, Ref V/(m/s) 30 kHz
 Directionality +/-1.5 dB

Environmental

Temperature Range -40 to 150°C
 Shock Limit 500 g
 Waterproof IP66
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 1.30"OD X 1.4"H
 33 mm OD X 36 mm H
 Weight 50 grams with 1 meter cable
 Case Material Stainless Steel/Epoxy
 Face Material Ceramic
 Connector BNC on integral cable
 Connector Locations Side

Certifications

II 1 (1) GD, Ex ia IIC T3

ORDERING INFORMATION AND ACCESSORIES

ISR3CA-HT ISR3CA-HT
 Cable (specify length in 'XX' m) XX
 IS Zener Barrier/Preamplifier Interface 1281

Sensors include

NIST Calibration Certificate & Warranty



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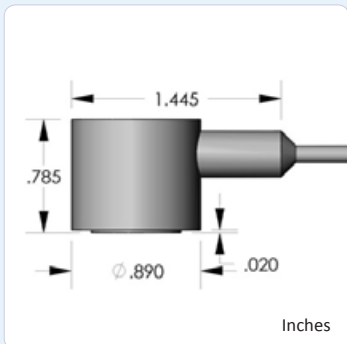
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PRODUCT DATA SHEET

ISR6 Sensor

Intrinsically Safe Sensor



DESCRIPTION AND FEATURES

The ISR6 sensor was designed specially to meet intrinsic Safety (IS) and IP66 environmental requirements. Certified as Intrinsically Safe (IS) for use with our 1276-2 IS preamplifier and 1276-1 and 1278 IS ASL-C subsystem, this sensor has a thicker ceramic wear-plate and an epoxy coating completely covering the sensor and cable exit. An IS voltage protection circuit is built into the sensor.

It has an integrated two-meter long cable with extruded TPE jacket and a pigtail for connecting into a 1276 or 1278 IS Preamplifier or Subsystem. The sensor has similar frequency response as the R6 sensor. Its maximum operating temperature is 125°C.

APPLICATIONS

This sensor is ideal for use on metal and FRP structures such as pipelines or storage tanks in petroleum, refineries, chemical plants, and offshore platforms where Intrinsically Safe is regulated, due to its high sensitivity and low resonance frequency properties.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 76 dB
 Peak Sensitivity, Ref V/ μ bar -63 dB
 Operating Frequency Range 35-80 KHz
 Resonant Frequency, Ref V/(m/s) -50 KHz
 Resonant Frequency, Ref V/ μ bar 85 KHz
 Directionality +/- 1.5 dB

Environmental

Temperature Range -45 to 125°C
 Shock Limit 1,000 g
 Waterproof IP66
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 0.89" OD X 0.755" H
 22.6 mm OD X 19.2 mm H
 Weight 33 grams with 2 meter cable
 Case Material Stainless steel/Epoxy
 Face Material Ceramic
 Connector Pigtail
 Connector Locations Side
 Seal Epoxy
 Sensor to Preamp Cable (2 meters) Integral

Certifications

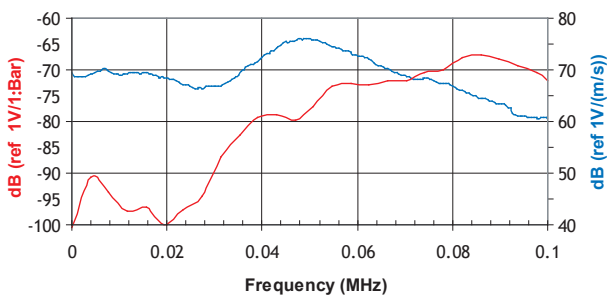
ATEX Certified, II1, GD, EEx, ia, IIC T4

ORDERING INFORMATION AND ACCESSORIES

ISR6 ISR6
 Pre-amplifier 1276-2
 ASL-4-20 mA Subsystem 1278/1276-1
 Preamp to System Cable (specify length in 'm') 1276C
 IS Barrier 1278B/1276B
 Other IS Sensors are available with various resonant and wideband frequencies.

Sensors include

NIST Calibration Certificate & Warranty



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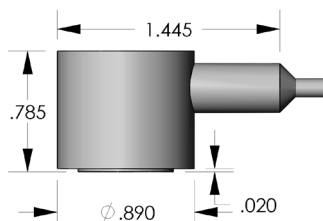
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ISR6CA-HT Sensor

Intrinsically Safe High Temperature Sensor

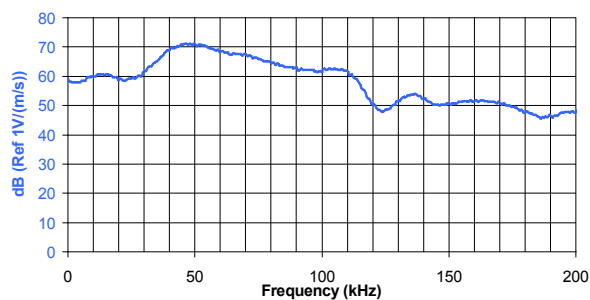


DESCRIPTION AND FEATURES

The ISR6CA-HT sensor is a low frequency sensor, resonant acoustic emission sensor with an integral cable. It is designed to meet the intrinsic safety (IS) and IP66 requirements and can operate at very high temperatures continuously. The special polymer coatings on the sensor along with an integral cable make it 100% insulated and non-conductive. The sensor can be used to temperatures of 150 C.

APPLICATIONS

The sensor can be readily used for structural health monitoring in harsh environments requiring intrinsic safety. It can be used for the monitoring of structures like pipelines, pressure vessels and storage tanks in petroleum refineries, chemical plants and offshore platforms.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	71 dB
Operating Frequency Range	35-100 kHz
Resonant Frequency, Ref V/(m/s)	60 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range -40 to 150°C
Shock Limit 500 g
Waterproof IP66
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....1.30"OD X 1.4"H
33 mm OD X 36 mm H
Weight.....27 grams with 1 meter cable
Case Material..... Stainless Steel/Epoxy
Face Material..... Ceramic
Connector..... BNC on integral cable
Connector Locations.....Side

Certifications

II 1 (1) GD, Ex ia IIC T3

ORDERING INFORMATION AND ACCESSORIES

ISR6CA-HT	ISR6CA-HT
Cable (specify length in '-XX' m)	XX
IS Zener Barrier/Preamplifier Interface	1281

Sensors include

NIST Calibration Certificate & Warranty



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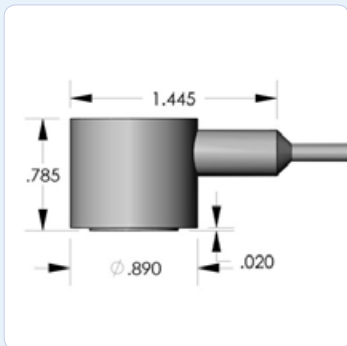
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PRODUCT DATA SHEET

ISR15 Sensor

Intrinsically Safe Sensor



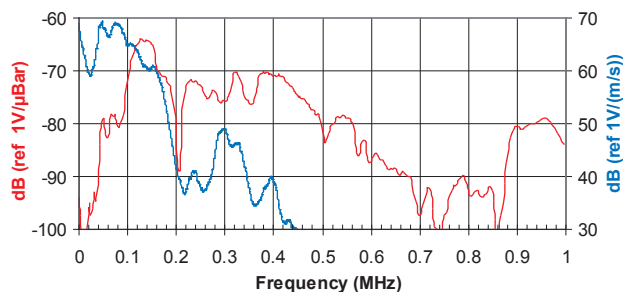
DESCRIPTION AND FEATURES

The ISR15 is a 150 kHz resonant frequency sensor that was designed specially to meet Intrinsic Safety (IS) and IP66 environmental requirements. Certified as Intrinsically Safe (IS) for use with our 1276-2 IS preamplifier and 1278 IS ASL-C subsystem, this sensor has a thicker ceramic wear-plate and an epoxy coating completely covering the sensor and cable exit. An IS voltage protection circuit is built into the sensor.

It has an integrated one-meter long differential cable with extruded TPE jacket and a pigtail for connecting into a 1276 or 1278 IS Preamplifier or Subsystem. The sensor has similar frequency response as the R15 sensor. Its maximum operating temperature is 125°C.

APPLICATIONS

This sensor provides a good mix of high sensitivity and high low frequency rejection. These properties make the sensor very useful for monitoring common structures such as pipelines, vessels, bridges, and storage tanks in petroleum, refineries, chemical plants, offshore platforms, where intrinsically safe sensors and systems are required.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	69 dB
Peak Sensitivity, Ref V/μbar.....	-62 dB
Operating Frequency Range.....	50-200 KHz
Resonant Frequency, Ref V/(m/s).....	75 dB
Resonant Frequency, Ref V/μbar.....	150 KHz
Directionality.....	+/- 1.5 dB

Environmental

Temperature Range.....	-45 to 125°C
Shock Limit.....	1,000 g
Waterproof.....	IP66
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.89"OD X 0.755"H
	22.6 mm OD X 19.2 mm H
Weight.....	27 grams with 1 meter cable
Case Material.....	Stainless steel/Epoxy
Face Material.....	Ceramic
Connector.....	Pigtail
Connector Locations.....	Side
Seal.....	Epoxy
Sensor to Preamp Cable (1 meter).....	Integral

Certifications

ATEX Certified, II1, GD, EEx, ia, IIC T4

ORDERING INFORMATION AND ACCESSORIES

ISR15.....	ISR15
Pre-amplifier.....	1276-2
ASL-4-20 ma Subsystem.....	1276-1
Preamp to System Cable (specify length in 'm').....	1276C
IS Zener Barrier.....	1276B
Other IS Sensors are available with various resonant frequencies.	

Sensors include

NIST Calibration Certificate & Warranty



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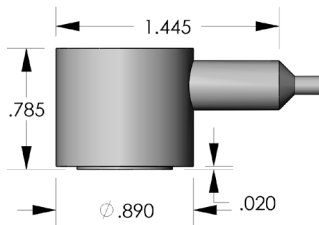
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PRODUCT DATA SHEET

ISR15CA-HT Sensor

Intrinsically Safe High Temperature Sensor



DESCRIPTION AND FEATURES

The ISR15CA-HT sensor is a medium frequency, resonant acoustic emission sensor with an integral cable. It is designed to meet the intrinsic safety (IS) and IP66 requirements and can operate at very high temperatures continuously. The special polymer coatings on the sensor along with an integral cable make it 100% insulated and non-conductive. The sensor can be used to temperatures of 150 C.

APPLICATIONS

The sensor can be readily used for structural health monitoring in harsh environments requiring intrinsic safety. It can be used for the monitoring of structures like pipelines, pressure vessels and storage tanks in petroleum refineries, chemical plants and offshore platforms.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	109 dB
Peak Sensitivity, Ref V/ μ bar	-22 dB
Operating Frequency Range	50-400 kHz
Resonant Frequency, Ref V/(m/s)	75 kHz
Resonant Frequency, Ref V/ μ bar	150 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-40 to 150°C
Shock Limit	500 g
Waterproof	IP66
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.89" OD X 0.8" H 23 mm OD X 20 mm H
Weight	27 grams with 1 meter cable
Case Material	Stainless Steel/Epoxy
Face Material	Ceramic
Connector	BNC on integral cable
Connector Locations	Side

Certifications

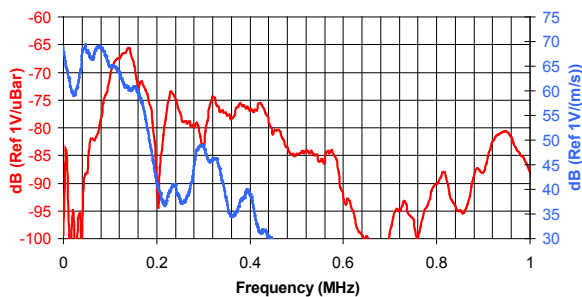
II 1 (1) GD, Ex ia IIC T3

ORDERING INFORMATION AND ACCESSORIES

ISR15CA-HT	ISR15CA-HT
Cable (specify length in 'XX' m)	XX
IS Zener Barrier/Preamplifier Interface	1281

Sensors include

NIST Calibration Certificate & Warranty



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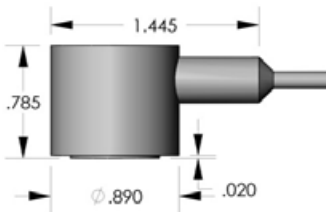
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PRODUCT DATA SHEET

ISR30 Sensor

Intrinsically Safe Sensor



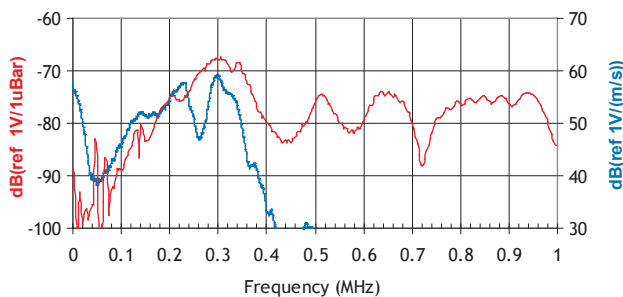
DESCRIPTION AND FEATURES

The ISR30 is a 300 kHz resonant frequency sensor that was designed specially to meet Intrinsic Safety (IS) and IP66 environmental requirements. Certified as Intrinsically Safe (IS) for use with our 1276-2 IS preamplifier and 1276-1 and 1278 IS ASL-C subsystem, this sensor has a thicker ceramic wear-plate and an epoxy coating completely covering the sensor and cable exit. An IS voltage protection circuit is built into the sensor.

It has an integrated one-meter long differential cable with extruded TPE jacket and a pigtail for connecting into a 1276 or 1278 IS Preamplifier or Subsystem. The sensor has similar frequency response as the R30 sensor. Its maximum operating temperature is 125°C.

APPLICATIONS

This sensor provides additional noise rejection for applications such as production line process monitoring applications such as punch press monitoring, forming operations, stamping, applications and process control applications such as leak detection within process control plants in the presence of flow and process noises, where intrinsically safe sensors and systems are required.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	58 dB
Peak Sensitivity, Ref V/ μ bar	-64 dB
Operating Frequency Range	150-400 KHz
Resonant Frequency, Ref V/(m/s)	300 dB
Resonant Frequency, Ref V/ μ bar	350 KHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range	-45 to 125°C
Shock Limit	1,000 g
Waterproof	IP66
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.89" OD X 0.755" H
	22.6 mm OD X 19.2 mm H
Weight	27 grams with 1 meter cable
Case Material	Stainless steel/Epoxy
Face Material	Ceramic
Connector	Pigtail
Connector Locations	Side
Seal	Epoxy
Sensor to Preamp Cable (1 meter)	Integral

Certifications

ATEX Certified, II1, GD, EEx, ia, IIC T4

ORDERING INFORMATION AND ACCESSORIES

ISR30	ISR30
Pre-amplifier	1276-2
ASL-4-20 ma Subsystem	1276-1
Preamp to System Cable (specify length in 'm')	1276C
IS Zener Barrier	1276B
Other IS Sensors are available with various resonant frequencies.	

Sensors include

NIST Calibration Certificate & Warranty



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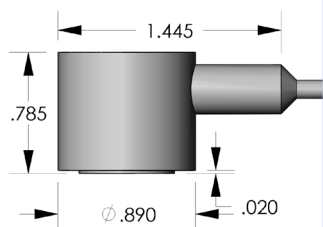
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PRODUCT DATA SHEET

ISR30CA-HT Sensor

Intrinsically Safe High Temperature Sensor



DESCRIPTION AND FEATURES

The ISR30CA-HT sensor is a medium frequency, resonant acoustic emission sensor with an integral cable. It is designed to meet the intrinsic safety (IS) and IP66 requirements and can operate at very high temperatures continuously. The special polymer coatings on the sensor along with an integral cable make it 100% insulated and non-conductive. The sensor can be used to temperatures of 150 C.

APPLICATIONS

The sensor can be readily used for structural health monitoring in harsh environments requiring intrinsic safety. It can be used for the monitoring of structures like pipelines, pressure vessels and storage tanks in petroleum refineries, chemical plants and offshore platforms.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)..... 58 dB
Peak Sensitivity, Ref V/ μ bar..... -64 dB
Operating Frequency Range..... 150-400 kHz
Resonant Frequency, Ref V/(m/s)..... 300 kHz
Resonant Frequency, Ref V/ μ bar..... 350 kHz
Directionality..... +/-1.5 dB

Environmental

Temperature Range..... -40 to 150°C
Shock Limit..... 1000 g
Waterproof..... IP66
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions..... 0.89"OD X 0.8"H
23 mm OD X 20 mm H
Weight..... 27 grams with 1 meter cable
Case Material..... Stainless Steel/Epoxy
Face Material..... Ceramic
Connector..... BNC on integral cable
Connector Locations..... Side

Certifications

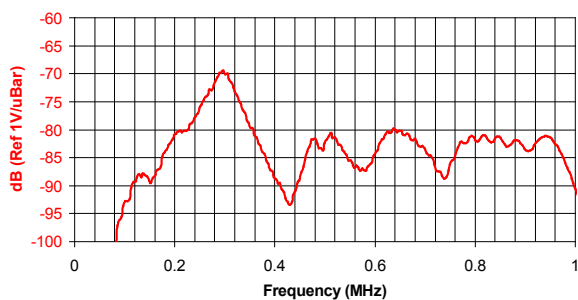
II 1 (1) GD, Ex ia IIC T3

ORDERING INFORMATION AND ACCESSORIES

ISR30CA-HT..... ISR30CA-HT
Cable (specify length in 'XX' m)..... XX
IS Zener Barrier/Preamplifier Interface..... 1281

Sensors include

NIST Calibration Certificate & Warranty



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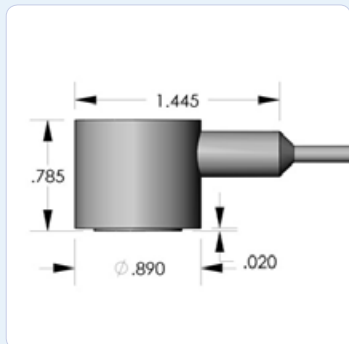
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ISR50 Sensor

Intrinsically Safe Sensor



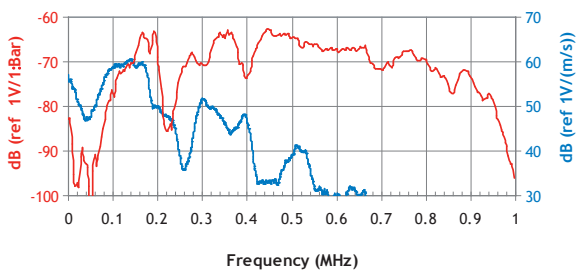
DESCRIPTION AND FEATURES

The ISR50 is a 500 kHz resonant frequency sensor that was designed specially to meet Intrinsic Safety (IS) and IP66 environmental requirements. Certified as Intrinsically Safe (IS) for use with our 1276-2 IS preamplifier and 1276-1 and 1278 IS ASL-C subsystem, this sensor has a thicker ceramic wear-plate and an epoxy coating completely covering the sensor and cable exit. An IS voltage protection circuit is built into the sensor.

It has an integrated one-meter long differential cable with extruded TPE jacket and a pigtail for connecting into a 1276 or 1278 IS Preamplifier or Subsystem. The sensor has similar frequency response as the R50 sensor. Its maximum operating temperature is 125°C.

APPLICATIONS

This sensor is useful in very noisy plant and process monitoring applications and is particularly suited to such applications as welding monitoring and control, where intrinsically safe sensors and systems are required.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	62 dB
Peak Sensitivity, Ref V/ μ bar	-65 dB
Operating Frequency Range	100-700 KHz
Resonant Frequency, Ref V/(m/s)	100 dB
Resonant Frequency, Ref V/ μ bar	500 KHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range	-45 to 125°C
Shock Limit	1,000 g
Waterproof	IP66
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.89" OD X 0.755" H
	22.6 mm OD X 19.2 mm H
Weight	27 grams with 1 meter cable
Case Material	Stainless steel/Epoxy
Face Material	Ceramic
Connector	Pigtail
Connector Locations	Side
Seal	Epoxy
Sensor to Preamp Cable (1 meter)	Integral

Certifications

ATEX Certified, II1, GD, EEx, ia, IIC T4

ORDERING INFORMATION AND ACCESSORIES

ISR50	ISR50
Pre-amplifier	1276-2
ASL-4-20 ma Subsystem	1276-1
Preamp to System Cable (specify length in 'm')	1276C
IS Zener Barrier	1276B
Other IS Sensors are available with various resonant frequencies.	

Sensors include

NIST Calibration Certificate & Warranty



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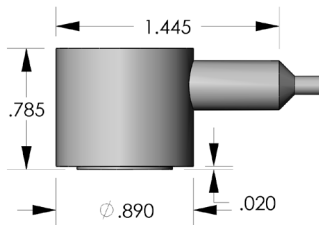
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PRODUCT DATA SHEET

ISR50CA-HT Sensor

Intrinsically Safe High Temperature Sensor

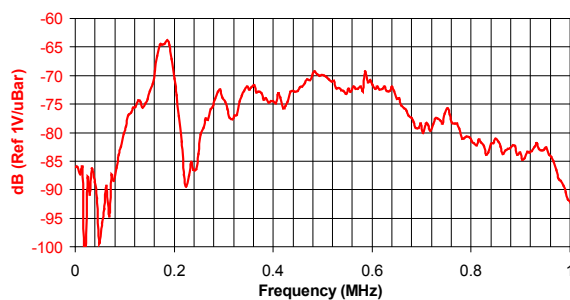


DESCRIPTION AND FEATURES

The ISR50CA-HT sensor is a medium frequency, resonant acoustic emission sensor with an integral cable. It is designed to meet the intrinsic safety (IS) and IP66 requirements and can operate at very high temperatures continuously. The special polymer coatings on the sensor along with an integral cable make it 100% insulated and non-conductive. The sensor can be used to temperatures of 150 C.

APPLICATIONS

The sensor can be readily used for structural health monitoring in harsh environments requiring intrinsic safety. It can be used for the monitoring of structures like pipelines, pressure vessels and storage tanks in petroleum refineries, chemical plants and offshore platforms.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	62 dB
Peak Sensitivity, Ref V/μbar	-65 dB
Operating Frequency Range	100-700 kHz
Resonant Frequency, Ref V/(m/s)	100 kHz
Resonant Frequency, Ref V/μbar	500 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-40 to 150°C
Shock Limit	1000 g
Waterproof	IP66
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.89"OD X 0.8"H
	23 mm OD X 20 mm H
Weight	27 grams with 1 meter cable
Case Material	Stainless Steel/Epoxy
Face Material	Ceramic
Connector	BNC on integral cable
Connector Locations	Side

Certifications

II 1 (1) GD, Ex ia IIC T3

ORDERING INFORMATION AND ACCESSORIES

ISR50CA-HT	ISR50CA-HT
Cable (specify length in 'XX' m)	XX
IS Zener Barrier/Preamplifier Interface	1281

Sensors include

NIST Calibration Certificate & Warranty



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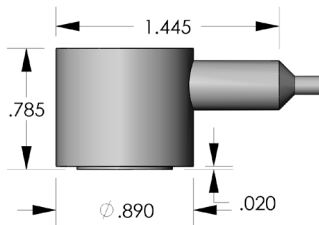
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PRODUCT DATA SHEET

ISRWDCA-HT Sensor

Intrinsically Safe High Temperature Sensor

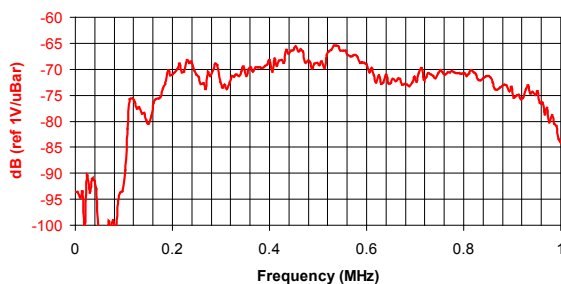


DESCRIPTION AND FEATURES

The ISRWDCA-HT is a wideband acoustic emission sensor with an integral cable. It is designed to meet the intrinsic safety (IS) and IP66 requirements and can operate at very high temperatures continuously. The special polymer coatings on the sensor along with an integral cable make it 100% insulated and non-conductive. The sensor can be used to temperatures of 150 C.

APPLICATIONS

The sensor can be readily used for structural health monitoring in harsh environments requiring intrinsic safety. It can be used for the monitoring of structures like pipelines, pressure vessels and storage tanks in petroleum refineries, chemical plants and offshore platforms.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	55 dB
Peak Sensitivity, Ref V/ μ bar	-63 dB
Operating Frequency Range	150-850 kHz
Resonant Frequency, Ref V/(m/s)	125 kHz
Resonant Frequency, Ref V/ μ bar	530 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-40 to 150°C
Shock Limit	1000 g
Waterproof	IP66
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.89" OD X 0.8" H 23 mm OD X 20 mm H
Weight	27 grams with 1 meter cable
Case Material	Stainless Steel/Epoxy
Face Material	Ceramic
Connector	BNC on integral cable
Connector Locations	Side

Certifications

II 1 (1) GD, Ex ia IIC T3

ORDERING INFORMATION AND ACCESSORIES

ISRWDCA-HT	ISRWDCA-HT
Cable (specify length in 'XX' m)	XX
IS Zener Barrier/Preamplifier Interface	1281

Sensors include

NIST Calibration Certificate & Warranty



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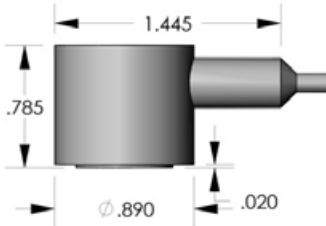
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PRODUCT DATA SHEET

ISWD Sensor

Intrinsically Safe Sensor



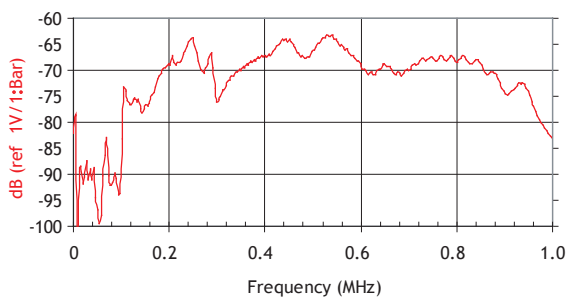
DESCRIPTION AND FEATURES

The ISWD is a wideband frequency sensor that was designed specially to meet Intrinsic Safety (IS) and IP65 environmental requirements. Certified as Intrinsically Safe (IS) for use with our 1276-2 IS preamplifier and 1276-1 and 1278 IS ASL-C subsystem, this sensor has a thicker ceramic wear-plate and an epoxy coating completely covering the sensor and cable exit. An IS voltage protection circuit is built into the sensor.

It has an integrated one-meter long differential cable with extruded TPE jacket and a pigtail for connecting into a 1276 or 1278 IS Preamplifier or Subsystem. The sensor has similar frequency response as the the WD sensor. Its maximum operating temperature is 125°C.

APPLICATIONS

Wideband sensors are typically used in research applications or other applications where a high fidelity AE response is required. In research applications, wideband AE sensors are useful where frequency analysis of the AE signal is required and in helping determine the predominant frequency band of AE sources for noise discrimination and selection of a suitable lower cost, general purpose AE sensor. In high fidelity applications, various AE wavemodes can be detected using wideband sensors, providing more information about the AE source and distance of the AE event.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	55 dB
Peak Sensitivity, Ref V/ μ bar	-63 dB
Operating Frequency Range	150-850 KHz
Resonant Frequency, Ref V/(m/s)	125 dB
Resonant Frequency, Ref V/ μ bar	530 KHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range	-45 to 125°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.89" OD X 0.755" H
	22.6 mm OD X 19.2 mm H
Weight	27 grams with 1 meter cable
Case Material	Stainless steel/Epoxy
Face Material	Ceramic
Connector	Pigtail
Connector Locations	Side
Seal	Epoxy
Sensor to Preamp Cable (1 meter)	Integral

Certifications

ATEX Certified

ORDERING INFORMATION AND ACCESSORIES

ISWD	ISWD
Pre-amplifier	1276-2
ASL-4-20 ma Subsystem	1276-1
Preamp to System Cable (specify length in 'm')	1276C
IS Zener Barrier	1276B
Other IS Sensors are available with various resonant frequencies.	

Sensors include

NIST Calibration Certificate & Warranty



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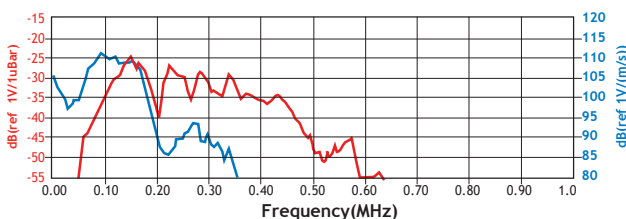
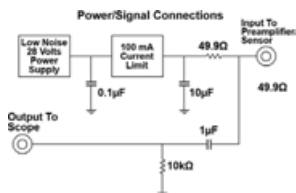
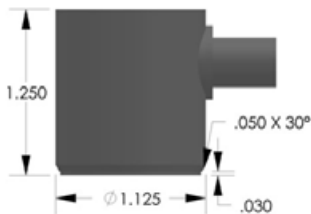
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PRODUCT DATA SHEET

LN150I Sensor

Medium Frequency Resonant Sensor



DESCRIPTION AND FEATURES

The LN150I sensor is a very low noise, medium frequency, resonant, acoustic emission sensor with an integral, ultra low noise, filtered, 40dB preamplifier, which can drive up to 1000 ft of cable. This new sensor represents an improvement in both noise and AST* performance, with noise level well below 2uV and an AST signal strength increase of 20dB over the R15I. The LN150I features a strong insulated, lightweight, Aluminum alloy, integrated sensor housing. The sensor outside shell is anodized, providing a non-conductive finish, to prevent any possible electric shorts from metal testing structures. The sensor outside casing is also color coded blue to identify the sensor model. The EMI shielding of the sensor has been improved by more than 300% compared with previous sensors. The sensor is the same size and has the same frequency response and sensitivity as the R15I sensor.

APPLICATIONS

The LN150I sensor can be used to replace R15I general purpose AE sensor in very low noise and high EMI noise applications, and applications requiring higher energy AST pulsing.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	110 dB
Peak Sensitivity, Ref V/ μ bar	-18 dB
Operating Frequency Range	50-200 kHz
Resonant Frequency, Ref V/(m/s)	90 kHz
Resonant Frequency, Ref V/ μ bar	150 kHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range	-35 to 75°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	1.13"OD X 1.28"H 29 mm OD X 32.5 mm H
Weight	51 grams
Case Material	Blue Color Anodized Aluminum Alloy
Face Material	Ceramic
Connector	BNC
Connector Locations	Side

Electrical

Input Voltage Range (VDC)	16-29
Operating/Max Current (mA)	26/120
Internal Preamp Gain	40 dB
Noise RTI (referred to input)	<2 μ V
AST	High Energy 40 V Tone Burst

ORDERING INFORMATION AND ACCESSORIES

LN150I	LN150I
Cable (specify cable length in meters)	1234-X
Magnetic Hold-Down	MHR15I
Amplifier Subsystem	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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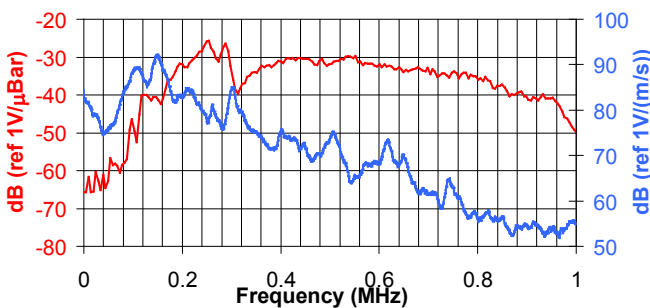
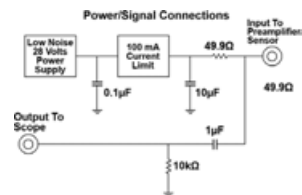
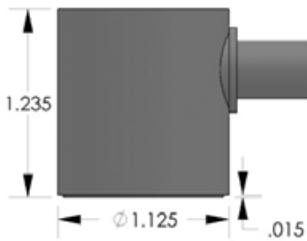
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PRODUCT DATA SHEET

LNWDI Sensor

Very Low Noise Differential Sensor



DESCRIPTION AND FEATURES

LNWDI is a true differential wideband sensor featuring an integrated ultra low noise differential preamplifier. The use of a true differential preamplifier increases the gain by approximately 6 dB relative to a single ended preamplifier and significantly reduces the noise level. The differential inputs give it an unparalleled noise performance with the noise levels being lower than 2 μ V relative to the input. The sensor has a very high sensitivity and good frequency response over the bandwidth of 100 - 900 kHz. This sensor is an ideal candidate for applications requiring low noise and high bandwidth for frequency analysis of the AE signals, for noise discrimination and source identification. The LNWDI includes a high energy tone burst pulser for AST. This sensor features a rugged steel construction and a BNC connector exiting from the side of the sensor.

APPLICATIONS

This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. Wideband sensors are particularly useful for research applications where a high fidelity AE response is required. It can be easily mounted using epoxy.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 92 dB
 Peak Sensitivity, Ref V/ μ bar -25 dB
 Operating Frequency Range 125-900 KHz
 Resonant Frequency, Ref V/(m/s) 125 kHz
 Resonant Frequency, Ref V/ μ bar 450 KHz
 Directionality +/- 1.5 dB

Environmental

Temperature Range -40 to 70°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 1.22" OD X 1.125" H
 31 mm OD X 28.575 mm H
 Weight 70 grams
 Case Material Stainless Steel
 Face Material Ceramic
 Connector BNC
 Connector Locations Side

Electrical

Gain 34 dB Differential (40 dB Equivalent)
 Power Requirements 17-29 VDC @ 30 mA
 Dynamic Range > 87 dB
 Output Drive Impedance < 5 Ω
 Grounding Case Grounding
 Noise Level (RMS RTI) < 2.0 μ V
 AST High Energy 40 V Tone Burst

ORDERING INFORMATION AND ACCESSORIES

LNWDI LNWDI
 Cable (specify length in 'XX' m at end of PN) 1234-X
 Magnetic Hold-Down MHSTD
 Amplifier Subsystems AE2A, AE5A,
 or Standard AE systems

Sensors include

NIST Calibration Certificate & Warranty



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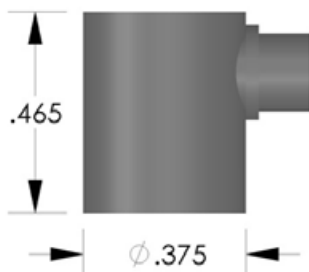
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PRODUCT DATA SHEET

Micro30 Sensor

Medium Frequency Miniature Sensor

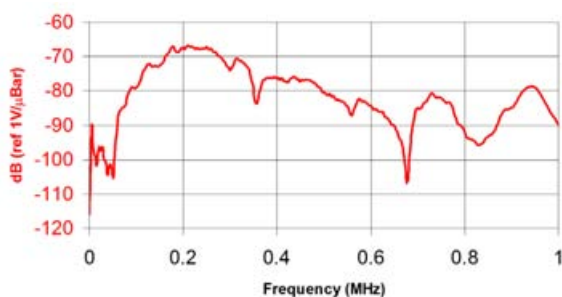


DESCRIPTION AND FEATURES

Micro30 sensor has a good frequency response over the range of 150 – 400 kHz. It has good sensitivity to AE signals even in presence of high background noise. Its small size and good bandwidth makes the sensor an ideal candidate for applications that have size and weight constraints on the sensors. The sensor features a small diameter, microdot connector exiting from the side of the sensor.

APPLICATIONS

The high sensitivity and bandwidth makes them ideal for structural health monitoring of critical structures like aircrafts, storage tanks etc. Typical applications include monitoring for fatigue and corrosion cracking in metals, delaminations and fiber breakage in composites. It can be mounted easily using epoxy.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	65 dB
Peak Sensitivity, Ref V/μbar	-67.5 dB
Operating Frequency Range	150-400 KHz
Resonant Frequency, Ref V/(m/s)	125 KHz
Resonant Frequency, Ref V/μbar	225 KHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-65 to 177°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.4"OD X 0.5"H
	10 mm OD X 12 mm H
Weight	5 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector	Microdot
Connector Locations.....	Side

ORDERING INFORMATION AND ACCESSORIES

Micro30	Micro30
Cable (specify cable length in 'm').....	1232-1
Preamplifier	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234-X
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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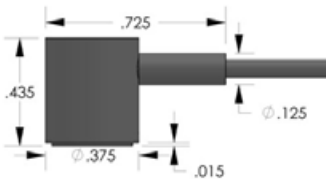
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PRODUCT DATA SHEET

Micro30D Sensor

Miniature Differential Sensor

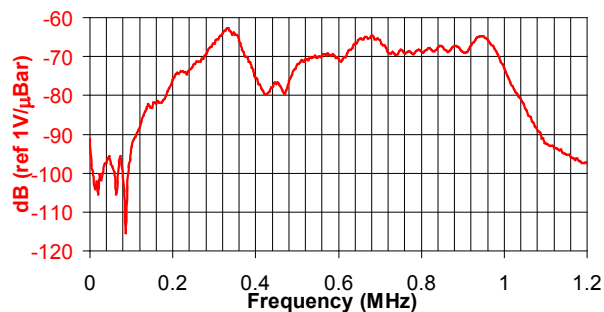


DESCRIPTION AND FEATURES

MICRO30D is a differential sensor designed to isolate the sensing terminals electrically from the cavity. This electrical isolation makes the sensor particularly useful for applications where high background electrical noise is a major concern. It has a very good sensitivity and frequency response over the range of 150 – 400 kHz. The two signal leads from the sensing element feed into a differential pre-amplifier which eliminates common-mode noise resulting in a lower noise output from the pre-amplifier. This sensor features a rugged steel construction and a dual BNC connector with an integrated twin axial cable exiting on the side.

APPLICATIONS

This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. Wideband sensors are well suited for research applications where a high fidelity AE response is required. It can be easily mounted using epoxy.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	65 dB
Peak Sensitivity, Ref V/μbar	-67.5 dB
Operating Frequency Range	150-400 KHz
Resonant Frequency, Ref V/(m/s)	125 KHz
Resonant Frequency, Ref V/μbar	225 KHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-65 to 177°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.7"OD X 0.65"H
	17.8 mm OD X 16.5 mm H
Weight	23 grams
Case Material	Stainless steel
Face Material	ceramic
Connector	Dual BNC
Connector Locations	Side

ORDERING INFORMATION AND ACCESSORIES

MICRO30D	MICRO30D
Cable (specify length '-XX' m at end of PN)	1 m
Magnetic Hold-Down	MHSTD
Amplifier Subsystems	AE2A, AE5A
Pre-amplifier	0/2/4, 2/4/6, ILD40

Sensors include

NIST Calibration Certificate & Warranty



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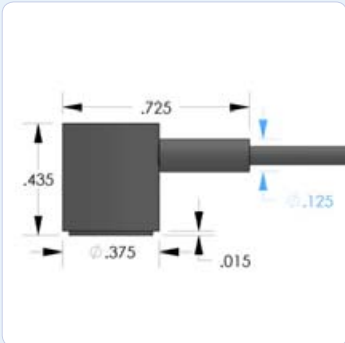
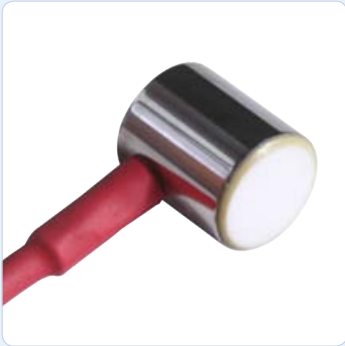
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PRODUCT DATA SHEET

Micro30S Sensor

Miniature Sensor

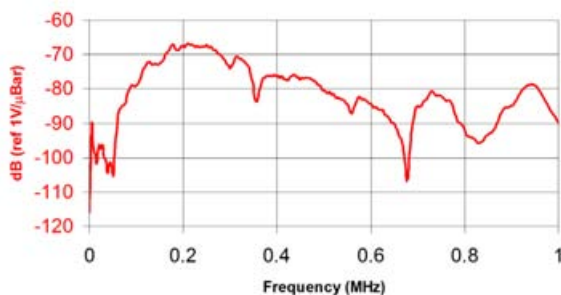


DESCRIPTION AND FEATURES

Micro30S sensor has a good frequency response over the range of 150 – 400 kHz. It has good sensitivity to AE signals even in presence of high background noise. Its small size and good bandwidth makes the sensor an ideal candidate for applications that have size and weight constraints on the sensors. The sensor features a small diameter, an integrated coaxial cable exiting from the side of the sensor.

APPLICATIONS

The high sensitivity and bandwidth makes them ideal for structural health monitoring of critical structures like aircrafts, storage tanks etc. Typical applications include monitoring for fatigue and corrosion cracking in metals, delaminations and fiber breakage in composites. It can be mounted easily using epoxy.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	65 dB
Peak Sensitivity, Ref V/μbar	-67.5 dB
Operating Frequency Range	150-400 KHz
Resonant Frequency, Ref V/(m/s)	125 KHz
Resonant Frequency, Ref V/μbar	225 KHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-65 to 177°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.4" OD X 0.5" H
	10 mm OD X 12 mm H
Weight (g)	5 grams
Case Material	Stainless steel
Face Material	Ceramic
Connector	Microdot
Connector Locations	Side

ORDERING INFORMATION AND ACCESSORIES

Micro30	Micro30
Cable (specify length in 'XX' m at end of PN)	1232-1
Preamplifier	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234-X
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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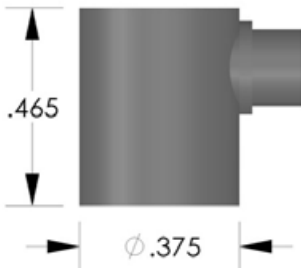
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PRODUCT DATA SHEET

Micro80 Sensor

Very Wideband Frequency Miniature Sensor

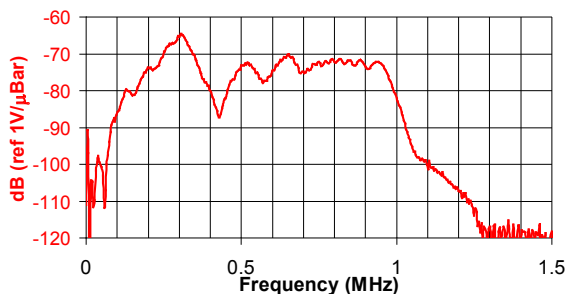


DESCRIPTION AND FEATURES

Micro80 sensor has a good frequency response over the range of 200 – 900 kHz. It has good sensitivity to AE signals even in presence of high background noise. Its small size and high bandwidth makes the sensor an ideal candidate for applications that have size and weight constraints on the sensors. The sensor features a small diameter, microdot connector exiting from the side of the sensor.

APPLICATIONS

The high sensitivity and bandwidth makes them ideal for structural health monitoring of critical structures like aircrafts, storage tanks etc. Typical applications include monitoring for fatigue and corrosion cracking in metals, delaminations and fiber breakage in composites. It can be mounted easily using epoxy.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	57 dB
Peak Sensitivity, Ref V/μbar	-65 dB
Operating Frequency Range	200-900 kHz
Resonant Frequency, Ref V/(m/s)	250 kHz
Resonant Frequency, Ref V/μbar	325 kHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range	-65 to 177°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.4"OD X 0.5"H
	10 mm OD X 12 mm H
Weight	5 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector	Microdot, 10-32
Connector Locations.....	Side

ORDERING INFORMATION AND ACCESSORIES

Micro80	Micro80
Cable (specify cable length).....	1232-1
Preamp to System Cable.....	1234-X
Pre-amplifier.....	0/2/4, 2/4/6
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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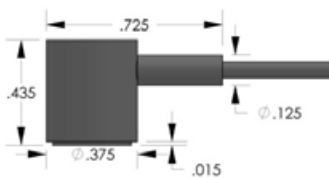
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PRODUCT DATA SHEET

Micro80D Sensor

Miniature Differential Sensor

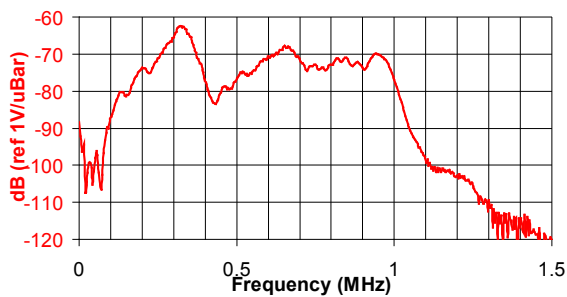


DESCRIPTION AND FEATURES

MICRO80D is a differential sensor designed to isolate the sensing terminals electrically from the cavity. This electrical isolation makes the sensor particularly useful for applications where high background electrical noise is a major concern. The sensor has a very high sensitivity and bandwidth. It has a good frequency response over the range of 175–900 kHz. The two signal leads from the sensing element feed into a differential pre-amplifier which eliminates common-mode noise resulting in a lower noise output from the pre-amplifier. This sensor features a rugged steel construction and a dual BNC connector with an integrated twin axial cable exiting on the side.

APPLICATIONS

This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. Wideband sensors are well suited for research applications where a high fidelity AE response is required. It can be easily mounted using epoxy.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 57 dB
 Peak Sensitivity, Ref V/ μ bar -65 dB
 Operating Frequency Range 175-900 KHz
 Resonant Frequency, Ref V/(m/s) 250 KHz
 Resonant Frequency, Ref V/ μ bar 325 KHz
 Directionality +/-1.5 dB

Environmental

Temperature Range -65 to 177°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 0.4"OD X 0.5"H
 10 mm OD X 12 mm H
 Weight 5 grams
 Case Material Stainless steel
 Face Material Ceramic
 Connector Dual BNC
 Connector Locations side

ORDERING INFORMATION AND ACCESSORIES

Micro80D Micro80D
 Cable (specify length '-XX' m at end of PN) 1 m
 Pre-amplifier 0/2/4, 2/4/6, 1220, IL40D
 Amplifier Subsystems AE2A, AE5A
 Cable (Pre-amplifier to system) 1243-X

Sensors include

NIST Calibration Certificate & Warranty



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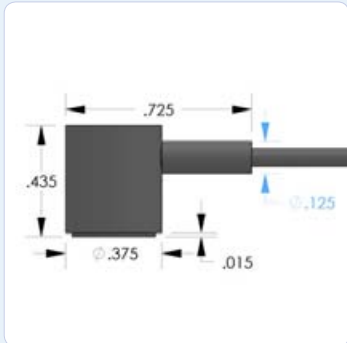
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PRODUCT DATA SHEET

Micro80S Sensor

Very Wideband Frequency Miniature Sensor

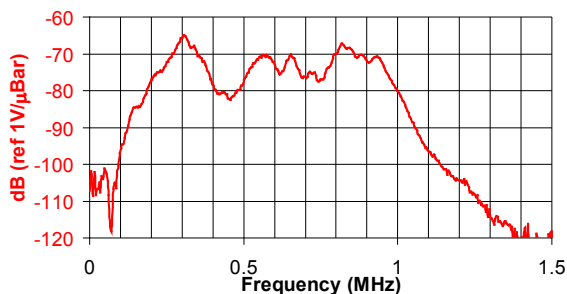


DESCRIPTION AND FEATURES

Micro80S sensor has a good frequency response over the range of 200 – 900 kHz. It has good sensitivity to AE signals even in presence of high background noise. Its small size and high bandwidth makes the sensor an ideal candidate for applications that have size and weight constraints on the sensors. The sensor features a small diameter, an integrated coaxial cable with a BNC connector exiting from the side of the sensor.

APPLICATIONS

The high sensitivity and bandwidth makes them ideal for structural health monitoring of critical structures like aircrafts, storage tanks etc. Typical applications include monitoring for fatigue and corrosion cracking in metals, delaminations and fiber breakage in composites. It can be mounted easily using epoxy.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	57 dB
Peak Sensitivity, Ref V/μbar	-65 dB
Operating Frequency Range	200-900 kHz
Resonant Frequency, Ref V/(m/s)	250 kHz
Resonant Frequency, Ref V/μbar	325 kHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range	-65 to 177°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.4" OD X 0.5" H 10 mm OD X 12 mm H
Weight	5 grams
Case Material	Stainless steel
Face Material	Ceramic
Connector	BNC on integral cable
Connector Locations	Side

ORDERING INFORMATION AND ACCESSORIES

Micro80S	Micro80S
Cable (specify cable length in 'XX' m)	1 m
Pre-amplifier	0/2/4, 2/4/6
Cable (Pre-amp to system, specify length)	1234-X
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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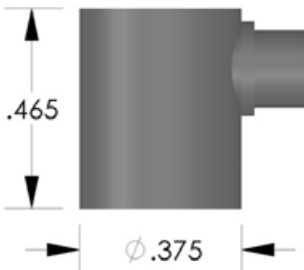
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PRODUCT DATA SHEET

Micro100 Sensor

Miniature Sensor

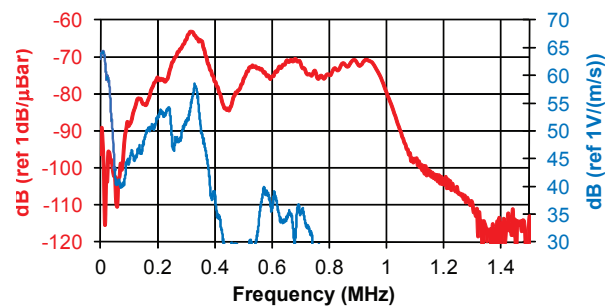


DESCRIPTION AND FEATURES

Micro100 sensor has a broadband frequency response with a bandwidth over the range of 200 – 950 kHz. Its small size and high bandwidth makes the sensor an ideal candidate for applications where high fidelity AE signals from multiple modes are a necessity. The sensor features a small diameter, microdot connector exiting from the side of the sensor.

APPLICATIONS

The sensor can be used in applications requiring high sensor bandwidth to determine the predominant frequency bandwidth of AE sources and noise discrimination. It can also find application in AE source discrimination for defect identification. It can be easily mounted using epoxy.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	60 dB
Peak Sensitivity, Ref V/μbar	-64 dB
Operating Frequency Range	200-950 KHz
Resonant Frequency, Ref V/(m/s)	300 KHz
Resonant Frequency, Ref V/μbar	600 KHz

Environmental

Temperature Range	-65 to 177°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.4"OD X 0.5"H
	10 mm OD X 12 mm H
Weight	5 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector	Microdot
Connector Locations.....	Side

ORDERING INFORMATION AND ACCESSORIES

Micro 100	Micro 100
Magnetic Hold-Down	MHWD
Preamplifier	IL40S, 0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234-X
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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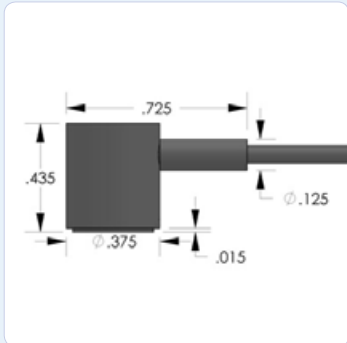
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PRODUCT DATA SHEET

Micro100D Sensor

Miniature Differential Sensor



DESCRIPTION AND FEATURES

MICRO100D is a differential sensor designed to isolate the sensing terminals electrically from the cavity. This electrical isolation makes the sensor particularly useful for applications where high background electrical noise is a major concern. The sensor has a very high sensitivity and bandwidth. It has a good frequency response over the range of 200–900 kHz. The two signal leads from the sensing element feed into a differential pre-amplifier which eliminates common-mode noise resulting in a lower noise output from the pre-amplifier. This sensor features a rugged steel construction and a dual BNC connector with an integrated twin axial cable exiting on the side.

APPLICATIONS

This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. Wideband sensors are well suited for research applications where a high fidelity AE response is required. It can be easily mounted using epoxy.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/ μ bar -64 dB
 Operating Frequency Range 200-900 KHz
 Resonant Frequency, Ref V/(m/s) 250 KHz
 Resonant Frequency, Ref V/ μ bar 325 KHz
 Directionality +/-1.5 dB

Environmental

Temperature Range -65 to 177°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

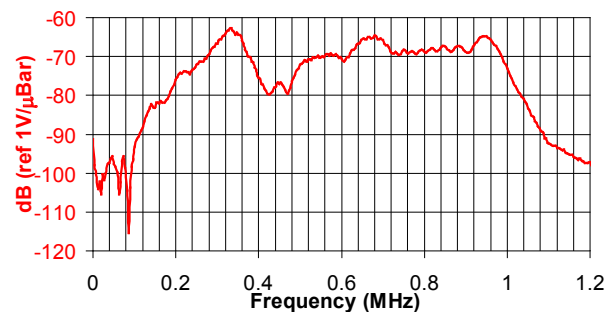
Dimensions 0.4"OD X 0.5"H
 10 mm OD X 12 mm H
 Weight 23 grams
 Case Material Stainless steel
 Face Material ceramic
 Connector Dual BNC
 Connector Locations side

ORDERING INFORMATION AND ACCESSORIES

MICRO100D MICRO100D
 Cable (specify length in 'XX' m at end of PN) 1 m
 Pre-Amplifier 0/2/4, 2/4/6
 Amplifier Subsystems AE2A, AE5A
 Cable (Pre-amplifier to system) 1234-X

Sensors include

NIST Calibration Certificate & Warranty



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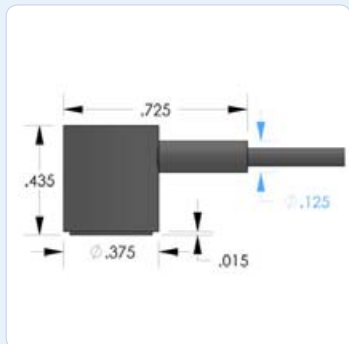
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PRODUCT DATA SHEET

Micro100S Sensor

Miniature Sensor

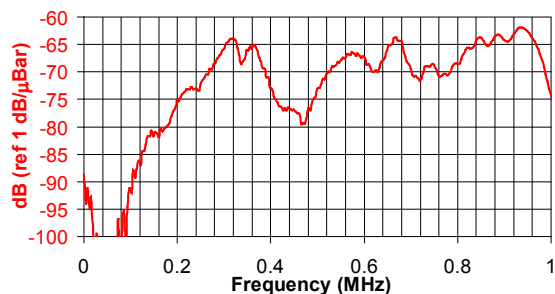


DESCRIPTION AND FEATURES

MICRO100S sensor has a good frequency response over the range of 200–950 kHz. It has good sensitivity to AE signals even in presence of high background noise. Its small size and high bandwidth makes the sensor an ideal candidate for applications that have size and weight constraints on the sensors. The sensor features a small diameter, an integrated coaxial cable with a BNC connector exiting from the side of the sensor.

APPLICATIONS

The high sensitivity and bandwidth makes them ideal for structural health monitoring of critical structures like aircrafts, storage tanks etc. Typical applications include monitoring for fatigue and corrosion cracking in metals, delaminations and fiber breakage in composites. It can be mounted easily using epoxy.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	56 dB
Peak Sensitivity, Ref V/μbar.....	-61 dB
Operating Frequency Range.....	200-950 KHz
Resonant Frequency, Ref V/(m/s).....	250 KHz
Resonant Frequency, Ref V/μbar.....	325 KHz
Directionality.....	+/- 1.5 dB

Environmental

Temperature Range.....	-65 to 177°C
Shock Limit.....	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.7"OD X 0.65"H
	18 mm OD X 17 mm H
Weight.....	18 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector.....	BNC
Connector Locations.....	Side

ORDERING INFORMATION AND ACCESSORIES

Micro100S.....	Micro100S
Cable (specify cable length in 'XX m).....	1 m
Pre-amplifier.....	0/2/4, 2/4/6
Amplifier Subsystems.....	AE2A, AE5A
Cable (Pre-amplifier to system).....	1234-X

Sensors include

NIST Calibration Certificate & Warranty



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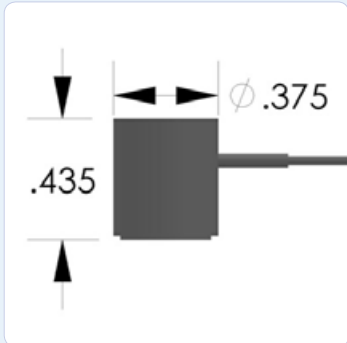
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PRODUCT DATA SHEET

Micro200HF Sensor

Very Wideband Frequency Miniature Sensor



DESCRIPTION AND FEATURES

MICRO-200HF sensor has a good frequency response over the range of 500 – 4500 kHz. Its small size and high bandwidth makes the sensor an ideal candidate for applications where high fidelity AE signals from multiple modes are a necessity. The sensor features a small diameter, microdot connector exiting from the side of the sensor.

APPLICATIONS

The rugged stainless steel cavity along with its small size and weight makes it an ideal sensor for structural health monitoring. The sensor can be used in applications requiring very high bandwidth to determine the predominant frequency bandwidth of AE sources and noise discrimination. It can be easily mounted using epoxy.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	62 dB
Peak Sensitivity, Ref V/ μ bar.....	-72 dB
Operating Frequency Range.....	500-4500 kHz
Resonant Frequency, Ref V/(m/s).....	2500 kHz
Directionality.....	N/A

Environmental

Temperature Range.....	-65 to 177°C
Shock Limit.....	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

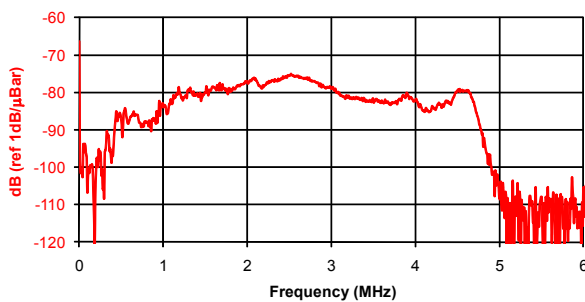
Dimensions.....	0.375" OD X 0.435" H
	9.5 mm OD X 11 mm H
Weight.....	5 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector.....	BNC
Connector Locations.....	Side

ORDERING INFORMATION AND ACCESSORIES

Micro200HF.....	Micro200HF
Magnetic Hold-Down.....	MHWD
Preamplifier.....	0/2/4, 2/4/6
Amplifier Subsystems.....	AE2A, AE5A
Preamp to System Cable (specify length in 'm').....	1234-X

Sensors include

NIST Calibration Certificate & Warranty



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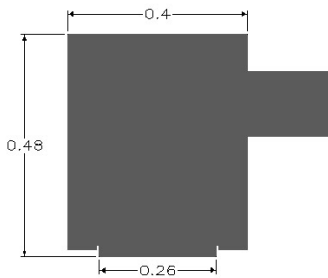
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PRODUCT DATA SHEET

Mini30S Sensor

Miniature Sensor

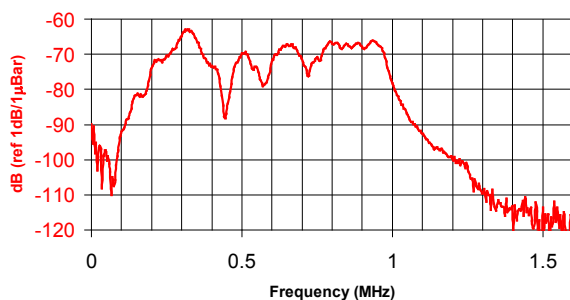


DESCRIPTION AND FEATURES

Mini30S sensor features a rugged stainless steel cavity with an integrated cable. Its small size and high bandwidth makes the sensor an ideal candidate for applications where high fidelity AE signals from multiple modes are a necessity. The sensor features a small diameter, a BNC connector at the end of a coaxial cable exiting from the side of the sensor.

APPLICATIONS

The high sensitivity and bandwidth makes it ideal for structural health monitoring of critical structures like aircrafts, storage tanks etc. Typical applications include monitoring for fatigue and corrosion cracking in metals, delaminations and fiber breakage in composites. With its high bandwidth it can be used in applications requiring frequency analysis to determine the sources of AE signals and noise discrimination. It can be mounted easily using epoxy.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 62 dB
 Peak Sensitivity, Ref V/μbar -65 dB
 Operating Frequency Range 270-970 KHz
 Resonant Frequency, Ref V/μbar 325 KHz
 Directionality +/- 1.5 dB

Environmental

Temperature Range -65 to 177°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 0.4"OD X 0.5"H
 10 mm OD X 12 mm H
 Weight 6 grams
 Case Material Stainless steel
 Connector BNC on integral cable
 Connector Locations Side exit coax, .05" dia and 36" long

ORDERING INFORMATION AND ACCESSORIES

MINI30S MINI30S
 Cable (specify cable length in 'm') 1 m
 Preamplifier 0/2/4, 2/4/6
 Preamp to System Cable (specify length in 'm') 1234-X
 Amplifier Subsystems AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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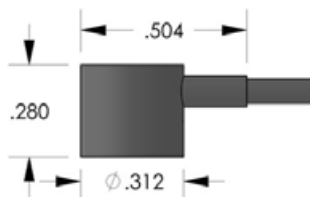
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PRODUCT DATA SHEET

Nano30 Sensor

Medium Frequency Resonant Miniature Sensor



DESCRIPTION AND FEATURES

The Nano-30 miniature AE sensor has a resonant response at 300KHz and a good frequency response over the range of 125 – 750 kHz. Its size makes the sensor an ideal candidate for applications where small size is important. The sensor features a small, 1 meter, integral coax cable, which exits from the side of the sensor with a BNC connector on the end.

APPLICATIONS

The sensor can be used in any application requiring a small, mid-band frequency response. It can easily be mounted using epoxy and can be mounted in small and tight spaces.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 62 dB
 Peak Sensitivity, Ref V/ μ bar -72 dB
 Operating Frequency Range 125-750 KHz
 Resonant Frequency, Ref V/(m/s) 140 KHz
 Resonant Frequency, Ref V/ μ bar 300 KHz
 Directionality +/- 1.5 dB

Environmental

Temperature Range -65 to 177°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

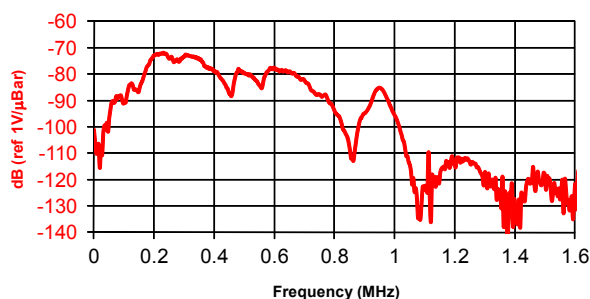
Dimensions 0.3"OD X 0.3"H
 8 mm OD X 8 mm H
 Weight 2 grams (8 with cable & connector)
 Case Material Stainless steel
 Face Material Ceramic
 Connector BNC
 Connector Locations Side

ORDERING INFORMATION AND ACCESSORIES

Nano30 Nano30
 Cable (specify cable length in meters) 1 m
 Preamplifier 0/2/4, 2/4/6
 Amplifier Subsystems AE2A, AE5A
 Preamp to System Cable (specify length in 'm') 1234-X

Sensors include

NIST Calibration Certificate & Warranty



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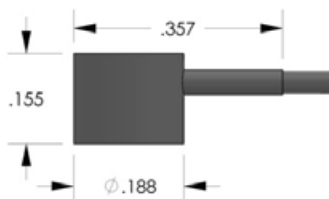
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PICO Sensor

Miniature Sensor

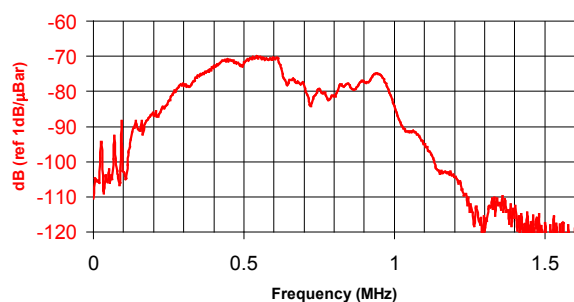


DESCRIPTION AND FEATURES

PICO sensor has a good bandwidth and very high sensitivity to AE signals. Its small size makes the sensor an ideal candidate for applications requiring a low profile sensor with negligible weight. The sensor features a small diameter, integral coax cable exiting from the side of the sensor with a BNC connector on the end.

APPLICATIONS

The sensor can be used in any application with a noisy environment and requiring a small size, mid-band frequency response. Their high sensitivity and bandwidth makes them ideal for structural health monitoring of critical structures like aircrafts, storage tanks etc. Typical applications include monitoring for fatigue and corrosion cracking in metals, delaminations and fiber breakage in composites. It can easily be mounted using epoxy and can be mounted in small and tight spaces.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	54 dB
Peak Sensitivity, Ref V/ μ bar.....	-68 dB
Operating Frequency Range.....	200-750 kHz
Resonant Frequency, Ref V/(m/s).....	250 kHz
Resonant Frequency, Ref V/ μ bar.....	550 kHz
Directionality.....	+/- 1.5 dB

Environmental

Temperature Range -65 to 177°C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....0.2"OD X 0.15"H
5 mm OD X 4 mm H
Weight.....<1 gram (12 grams with cable & connector)
Case Material.....Stainless Steel
Face Material.....Stainless Steel
Connector.....BNC on integral coax cable
Connector Locations.....Side

ORDERING INFORMATION AND ACCESSORIES

PICO.....	PICO
Pre-amplifier.....	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm').....	1234-X
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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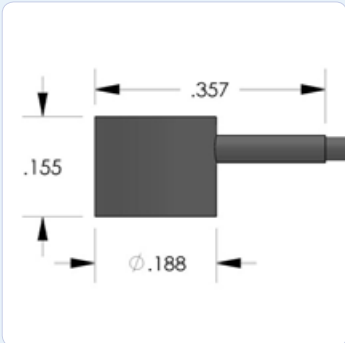
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PRODUCT DATA SHEET

PICO HF-1.2 Sensor

600 kHz Frequency, Micro-Miniature Sensor

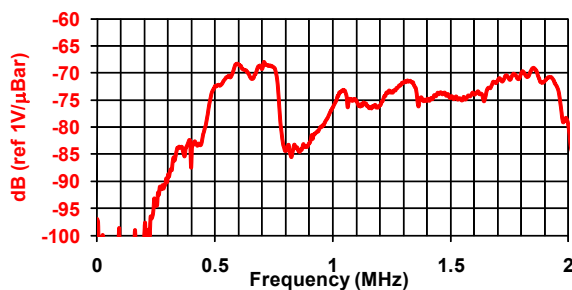


DESCRIPTION AND FEATURES

The PICO HF-1.2 is a micro-miniature sensor with a wide-band and relatively flat frequency response over the range of 500 – 1850 kHz. Its small size makes the sensor an ideal candidate for computer hard disk examination and other applications requiring very small size, low weight and wideband AE sensor response. A small diameter, integral coax cable exits from the side of the sensor with a BNC connector on the other end.

APPLICATIONS

Due to its extremely small size, this sensor is ideal for applications such as hard disk monitoring, where small size and low mass sensors are required. Additionally, the PICO HF-1.2 can be used in research applications or other applications where a small aperture, high fidelity AE response is required. The sensor is useful in research applications, where frequency analysis of the AE signal is needed and in helping determine the predominant frequency band of AE sources for noise discrimination and selection of suitable lower cost, general purpose AE sensors.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/μbar -72 dB
 Operating Frequency Range 500-1850 KHz
 Resonant Frequency, Ref V/(m/s) 600 KHz
 Directionality +/- 1.5 dB

Environmental

Temperature Range -65 to 177°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 0.2" OD X 0.15" H
 5 mm OD X 4 mm H
 Weight 1 gram (7 with cable & connector)
 Case Material Stainless steel
 Face Material Ceramic
 Connector Integral cable with BNC Connector
 Seal Epoxy
 Sensor to Preamp Cable
 Integral, 0.033" diameter x 24" length

ORDERING INFORMATION AND ACCESSORIES

PICO HF-1.2 PICO HF-1.2
 Cable (specify length in 'XX' m at end of PN) 1 m
 Preamplifier 0/2/4, 2/4/6
 Preamp to System Cable (specify length in 'm') 1234 - X
 Amplifier Subsystems AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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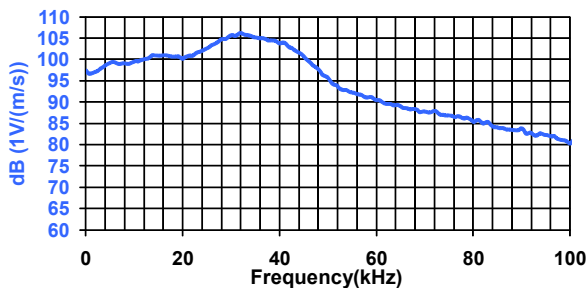
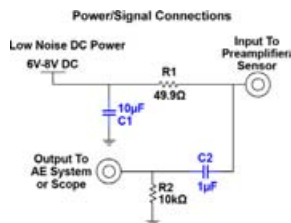
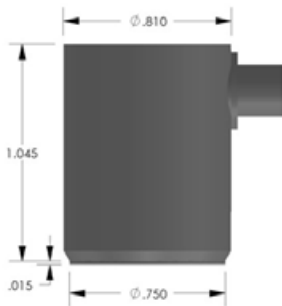
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PRODUCT DATA SHEET

PK3I Sensor

Low Frequency Integral Preamplifier Resonant Sensor



DESCRIPTION AND FEATURES

The PK3I sensor is a low frequency, resonant, acoustic emission sensor with an integral, ultra low noise, low power, filtered, 26dB preamplifier, which can drive up to 200 meters of cable. This new sensor represents an improvement in both noise and low power consumption performance, with noise level below 3 μ V and power consumption of 25 mW. The PK3I features a strong stainless steel, integrated body structure. The sensor has a similar frequency response as the R3I sensor, except smaller.

The integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time before, during or after the test.

APPLICATIONS

The PK3I sensor has been designed to be used with the Pocket AE, a small handheld AE system, or with the Sensor Highway II, an outdoor rated, on-line monitoring system.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	106 dB
Operating Frequency Range	15-40 kHz
Resonant Frequency, Ref V/(m/s)	28 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-35 to 80°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.812"OD X 1.06"H
	20.6 mm OD X 27 mm H
Weight	52 grams
Case Material.....	Stainless Steel
Face Material.....	Ceramic
Connector	SMA
Connector Locations.....	Side

Electrical

Gain	26 dB
Power Requirements	4-7 VDC @ 5 mA
Operating/Max Current.....	5/35 mA
Noise Level (RMS RTI)	<3 μ V

ORDERING INFORMATION AND ACCESSORIES

PK3I	PK3I
Cable (specify cable length).....	1234-SMA/BNC-X
Magnetic Hold-Down	MHPK15I

Sensors include

NIST Calibration Certificate & Warranty

* AST — Auto Sensor Testing feature allows AE systems to control the sensor as a pulser and a receiver at the same time. It can therefore characterize its own condition as well as send out a simulated acoustic emission wave that other sensors can detect, so the condition of the nearby sensors also can be tested.



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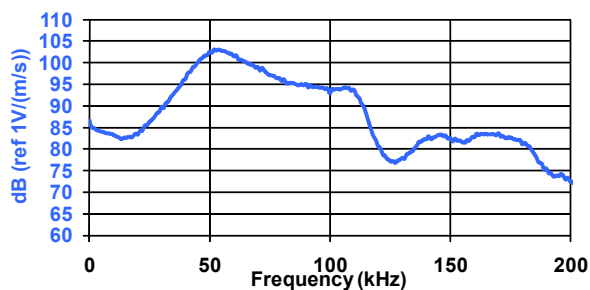
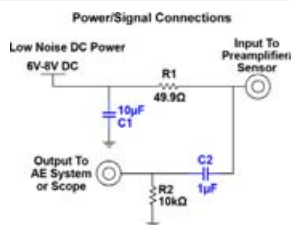
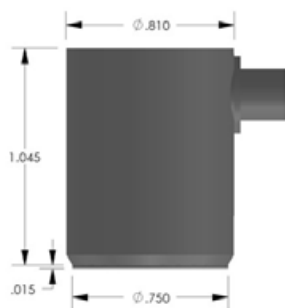
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PK6I Sensor

Medium Frequency Integral Preamplifier Resonant Sensor



DESCRIPTION AND FEATURES

The PK61 sensor is a medium frequency, resonant, acoustic emission sensor with an integral, ultra low noise, low power, filtered, 26dB preamplifier, which can drive up to 200 meters of cable. This sensor represents an improvement in both noise and low power consumption performance, with noise level below 3 μ V and power consumption of 25 mW. The PK61 features a strong stainless steel, integrated body structure. The sensor has smaller size and the same frequency response as the R61 sensor.

The integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time before, during or after the test.

APPLICATIONS

The PK6I sensor has been designed to be used with the Pocket AE, a small handheld AE system, or with the Sensor Highway II, an outdoor rated, on-line monitoring system.

PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	106 dB
Operating Frequency Range	35-65 kHz
Resonant Frequency, Ref V/(m/s)	~55 kHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range -35 to 80°C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....0.812"OD X 1.06"H
20.6 mm OD X 27 mm H
Weight.....45 grams
Case Material.....Stainless Steel
Face Material.....Ceramic
Connector.....SMA
Connector Locations.....Side

Electrical

Gain	26 dB
Power Requirements	4-7 VDC @ 5 mA
Operating/Max Current	5/35 mA
Noise Level (RMS RTI)	<3 μ V

ORDERING INFORMATION AND ACCESSORIES

PK6I PK6I
Cable (specify cable length)..... 1234-SMA/BNC-X
Magnetic Hold-Down MHPK15I
Amplifier Subsystem AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty

* AST — Auto Sensor Testing feature allows AE systems to control the sensor as a pulser and a receiver at the same time. It can therefore characterize its own condition as well as send out a simulated acoustic emission wave that other sensors can detect, so the condition of the nearby sensors also can be tested.



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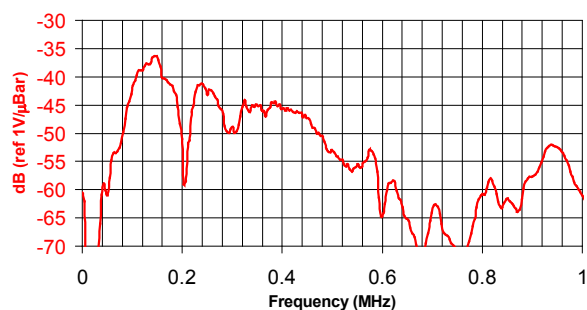
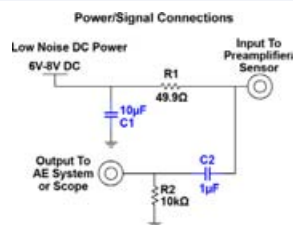
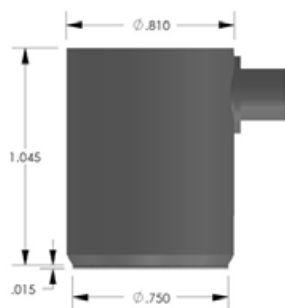
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PK15I Sensor

Medium Frequency Integral Preamplifier Resonant Sensor



DESCRIPTION AND FEATURES

The PK15I sensor is a medium frequency, resonant, acoustic emission sensor with an integral, ultra low noise, low power, filtered, 26dB preamplifier, which can drive up to 200 meters of cable. This new sensor represents an improvement in both noise and low power consumption performance, with noise level below 3 μV and power consumption of 25 mW. The PK15I features a strong stainless steel, integrated body structure. The sensor is smaller size and the same frequency response as the R15I sensor.

The integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time before, during or after the test.

APPLICATIONS

The PK15I sensor has been designed to be used with the Pocket AE, a small handheld AE system, or with the Sensor Highway II, an outdoor rated, on-line monitoring system.

PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/ μ bar	-36 dB
Operating Frequency Range	100-450 kHz
Resonant Frequency, Ref V/ μ bar	150 kHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range -35 to 80°C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....0.812"OD X 1.06"H
20.6 mm OD X 27 mm H
Weight.....51 grams
Case Material.....Stainless Steel
Face Material.....Ceramic
Connector.....SMA
Connector Locations.....Side

Electrical

Gain	26 dB
Power Requirements	4-7 VDC @ 5 mA
Operating/Max Current	5/35 mA
Noise Level (RMS RTI)	< 3 μ V

ORDERING INFORMATION AND ACCESSORIES

PK15I	PK15I
Cable (specify cable length).....	1234-SMA/BNC-X
Magnetic Hold-Down	MHPK15I
Amplifier Subsystem.....	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty

* AST — Auto Sensor Testing feature allows AE systems to control the sensor as a pulser and a receiver at the same time. It can therefore characterize its own condition as well as send out a simulated acoustic emission wave that other sensors can detect, so the condition of the nearby sensors also can be tested.



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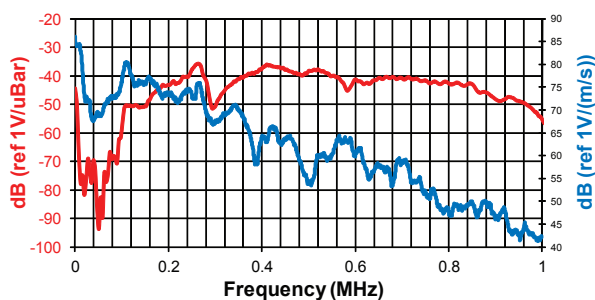
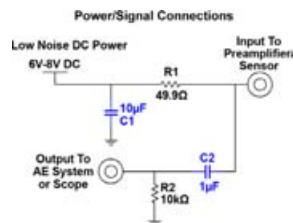
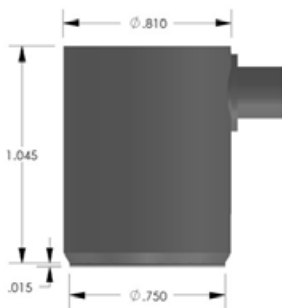
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PRODUCT DATA SHEET

PK30I Sensor

Integral Preamplifier Sensor



DESCRIPTION AND FEATURES

The PK30I is a narrow band sensor featuring an integral, ultra low noise and low power preamplifier. The bandpass filtered preamplifier has a gain of 26dB which can drive up to 200 meters of cable. The sensor has a resonance frequency around 300kHz. The PK series sensors represent an improvement in both noise and power consumption. With noise level below 3 μ V and power consumption as little as 25 mW, the sensor is ideal for use with battery powered portable equipment. The PK30I features a rugged stainless steel, integrated body structure.

APPLICATIONS

PK30I sensor has been designed to be used with pocket AE system, a small hand-held AE system, or with Highway-II an outdoor rated, on-line monitoring system.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	82 dB
Peak Sensitivity, Ref V/ μ bar	-39 dB
Operating Frequency Range	200-450 kHz
Resonant Frequency, Ref V/(m/s)	300 kHz
Resonant Frequency, Ref V/ μ bar	350 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-35 to 75°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.81" OD X 1.06" H 20.6 mm OD X 27 mm H
Weight	51 grams
Case Material	Stainless Steel (304)
Face Material	Ceramic
Connector	SMA
Connector Locations	Side

Electrical

Gain	26 dB
Power Requirements	4-7 VDC @ 5 mA
Dynamic Range	>87 dB
Noise Level (RMS RTI)	<3 μ V
Output Drive Impedance	50 Ω
Grounding	Case Grounding (isolated from mounting surface)

ORDERING INFORMATION AND ACCESSORIES

PK30I	PK30I
Cable (specify length in 'XX' m)	1234-SMA/BNC-X
Magnetic Hold-Down	MHR30I
Preamp to System Cable (specify length in 'm')	1234-X
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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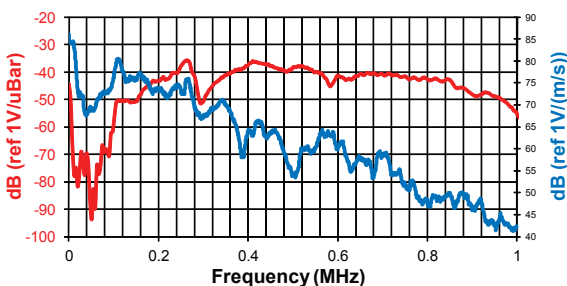
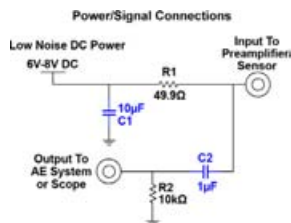
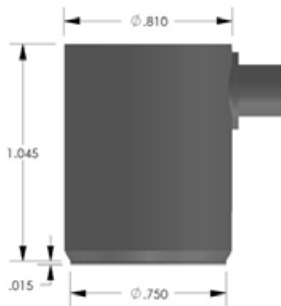
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PRODUCT DATA SHEET

PKWDI Sensor

Wideband Low Power Integral Preamplifier Resonant Sensor



DESCRIPTION AND FEATURES

The PKWDI sensor is a wideband frequency, acoustic emission sensor with an integral, ultra low noise, low power, filtered, 26dB preamplifier, which can drive up to 200 meters of cable. This sensor represents an improvement in both noise and low power consumption performance, with noise level below 3 μ V and power consumption of 25 mW. The PKWDI features a strong stainless steel, integrated body structure.

The integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time before, during or after the test.

APPLICATIONS

The PKWDI sensor has been designed to be used with the Pocket AE, a small handheld AE system, or with the Sensor Highway II, an outdoor rated, on-line monitoring system.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	80 dB
Peak Sensitivity, Ref V/ μ bar	-34 dB
Operating Frequency Range	200-850 KHz
Resonant Frequency, Ref V/(m/s)	270 dB
Resonant Frequency, Ref V/ μ bar	110 KHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range	-35 to 80°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.812" OD X 1.07"H
	20.6 mm OD X 27 mm H
Weight	51 grams
Case Material	Stainless steel
Face Material	Ceramic
Connector	SMA
Connector Locations	Side

Electrical

Gain	26 dB
Power Requirements	4 to 7 VDC @ 5 mA
Operating/Max Current	5/35 mA
Noise Level (RMS RTI)	< 3 μ V

ORDERING INFORMATION AND ACCESSORIES

PKWDI	PKWDI
Cable (specify length in '-XX' m at end of PN)	1234-SMA/BNC-X
Magnetic Hold-Down	MHPK15I
Amplifier Subsystem	AE2A, AE5A
Other IS Sensors are available with various resonant frequencies.	

Sensors include

NIST Calibration Certificate & Warranty



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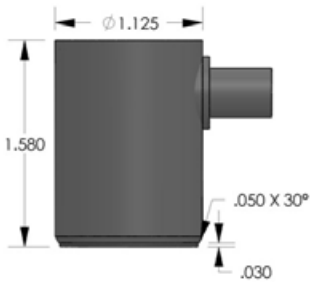
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PRODUCT DATA SHEET

R.45 Sensor

Low Frequency Sensor



DESCRIPTION AND FEATURES

The R.45 is a low frequency resonant AE sensor with very high sensitivity. With a resonant frequency of 20 kHz the sensor is ideal for monitoring AE activity in very large structures. The sensor features a rugged stainless steel cavity with a BNC connector on the side.

APPLICATIONS

The sensor can be used in any application requiring a resonant low frequency sensor. Typical applications include structural health monitoring of large concrete, steel and geologic structures. The can also be used for leak detection in pipes and tanks.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 85 dB
Operating Frequency Range 5-30 kHz
Resonant Frequency, Ref V/(m/s) 20 kHz
Directionality +/-1.5 dB

Environmental

Temperature Range -45° to 150° C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

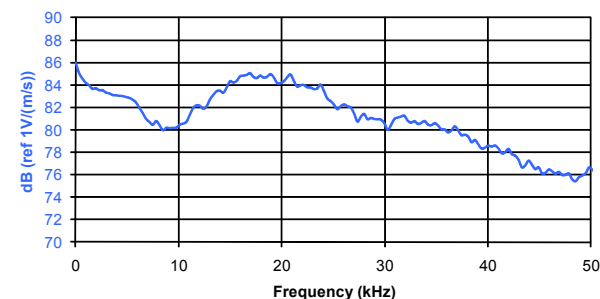
Dimensions 1.125" OD X 1.55" H
28.6 mm OD X 40.6 mm H
Weight 121 grams
Case Material Stainless Steel
Face Material Ceramic
Connector BNC
Connector Locations Side

ORDERING INFORMATION AND ACCESSORIES

R.45 R.45
Cable (specify length in 'XX' m at end of PN) 1234-X
Magnetic Hold-Down MHSTD
Pre-amplifier 0/2/4, 2/4/6, 1220
Preamp to System Cable (specify length in 'm') 1234-X
Amplifier Subsystems AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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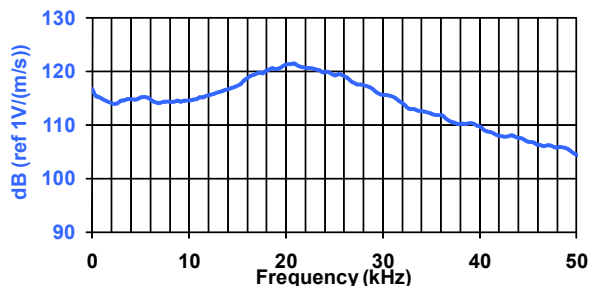
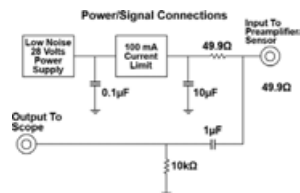
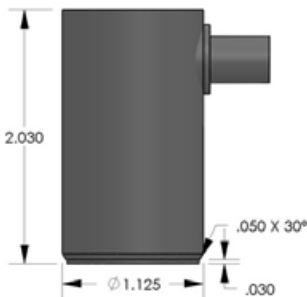
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PRODUCT DATA SHEET

R.45I Sensor

Very Low Frequency Sensor



DESCRIPTION AND FEATURES

The R.45I is a very low frequency and High sensitivity, internally amplified AE sensor with a 20 kHz resonance frequency, 124 dB peak sensitivity and useful bandwidth from 1 to 30 kHz. The sensor has a standard BNC connector on the side of the sensor. The cavity is made from Stainless steel. It is approximately 2.0" (50 mm) high.

PAC's integral preamp sensors were specifically engineered to attain high sensitivity and have the capability to drive long cables without the need for a separate preamplifier. Incorporating a low-noise input, 40dB preamplifier and a filter all inside the sensor housing, these transducers are completely enclosed in metal stainless steel (or aluminum) housings that are treated to minimize RFI/EMI interference. Care has also been taken to thermally isolate the critical input stage of the preamplifier in order to provide excellent temperature stability over the range of -35° to 75° C.

Their integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time before, during or after an AE test.

APPLICATIONS

This sensor is normally selected for structural health monitoring of concrete and geologic structures. It is also a good choice for pipeline leak detection.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	124 dB
Operating Frequency Range.....	1-30 kHz
Resonant Frequency, Ref V/(m/s).....	20 kHz
Directionality.....	+/-1.5 dB

Environmental

Temperature Range.....	-35° to 75° C
Shock Limit.....	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	1.125"OD X 2.0"H
	28.6 mm OD X 50 mm H
Weight.....	121 grams
Case Material.....	Stainless Steel
Face Material.....	Ceramic
Connector.....	BNC
Connector Locations.....	Side

Electrical

Gain.....	40 dB
Power Requirements.....	20-30 VDC @ 25 mA
Dynamic Range.....	> 87 dB
Noise Level (RMS RTI).....	< 3 μV
Output Drive Impedance.....	50 Ω
Grounding.....	Case Grounding,
	Isolated from mounting surface

ORDERING INFORMATION AND ACCESSORIES

R.45I	R.45I
Cable (specify length in '-XX' m at end of PN)	1234-X
Magnetic Hold-Down	MHR.45I
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty

* AST — Auto Sensor Testing feature allows AE systems to control the sensor as a pulser and a receiver at the same time. It can therefore characterize its own condition as well as send out a simulated acoustic emission wave that other sensors can detect, so the condition of the nearby sensors also can be tested.



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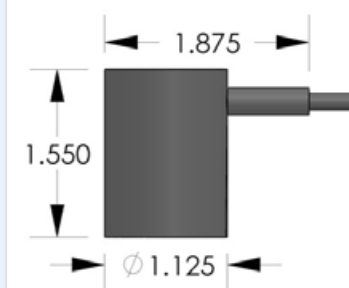
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R1.5 Sensor

Low Frequency High Sensitivity Sensor



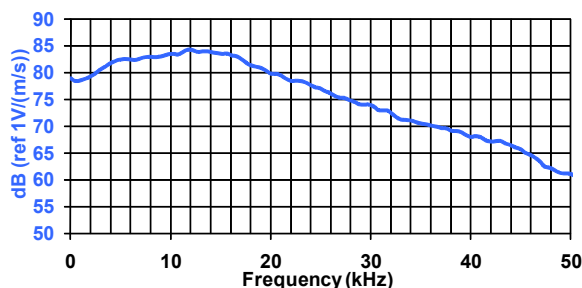
DESCRIPTION AND FEATURES

The R1.5 is a low frequency and high sensitivity AE sensor with 14 kHz resonance frequency, 85 dB peak sensitivity and useful bandwidth from 5 to 20 kHz. The sensor has a standard 1 meter RG58 coax cable and BNC connector on the side of the sensor. The cavity is made from stainless steel. It is approximately 1.55" (40 mm) high.

These transducers are completely enclosed in metal stainless steel housings, fabricated to minimize RFI/EMI interference.

APPLICATIONS

This sensor is normally used in structural health monitoring of concrete and steel structures. It is also a good choice for pipeline leak detection.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	85 dB
Operating Frequency Range	5-20 kHz
Resonant Frequency, Ref V/(m/s)	14 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range -35 to 150° C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....1.125"OD X 1.55"H
28.6 mm OD X 40.6 mm H
Weight.....100 grams
Case Material.....Stainless Steel
Face Material.....Stainless Steel
Connector.....1 m cable with BNC
Connector Locations.....Side

ORDERING INFORMATION AND ACCESSORIES

R1.5	R1.5
Cable (specify length in '-XX' m at end of PN)	1234 - X
Magnetic Hold-Down	MHR1.5L
External Pre-Amplifier	2/4/6 or IL
Preamplifier to System Cable (specify length in 'm')	1234-X
Amplifier Subsystems	AE2A
Pre-amplifiers	0/2/4, 2/4/6

Sensors include

NIST Calibration Certificate & Warranty



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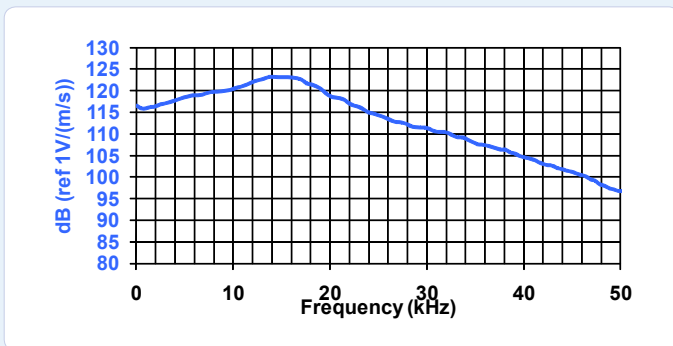
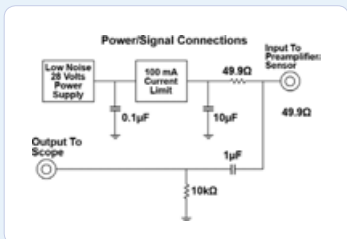
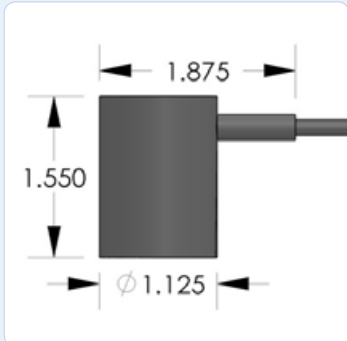
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PRODUCT DATA SHEET

R1.5I-AST Sensor

Very Low Frequency High Sensitivity Sensor



DESCRIPTION AND FEATURES

This is a low frequency and High sensitivity AE sensor with 14 kHz resonance frequency, 124 dB peak sensitivity and useful bandwidth from 5 to 20 kHz. The sensor shares a standard I meter RG59 cable with BNC connector on the side of the sensor. The cavity is made from Stainless steel. It is approximately 1.55" (40 mm) high.

PAC's integral preamp sensors were specifically engineered to attain high sensitivity and have the capability to drive long cables without the need for a separate preamplifier. Incorporating a low-noise input, 40dB preamplifier and a filter all inside the sensor housing, these transducers are completely enclosed in metal stainless steel (or aluminum) housings that are treated to minimize RFI/EMI interference. Care has also been taken to thermally isolate the critical input stage of the preamplifier in order to provide excellent temperature stability over the range of -35° to 75° C.

Their integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time throughout the test.

APPLICATIONS

This sensor is normally selected for structural health monitoring of concrete and steel structures. It is also a good choice for pipeline leak detection.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)..... 124 dB
 Operating Frequency Range..... 5-20 kHz
 Resonant Frequency, Ref V/(m/s)..... 14 kHz
 Directionality..... +/-1.5 dB

Environmental

Temperature Range..... -35 to 75° C
 Shock Limit..... 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions..... 1.125"OD X 1.55"H
 28.6 mm OD X 40.6 mm H
 Weight..... 130 grams
 Case Material..... Stainless Steel
 Face Material..... Stainless Steel
 Connector..... BNC
 Connector Locations..... Side

Electrical

Gain..... 40 dB
 Power Requirements..... 20-30 VDC @ 25 mA
 Dynamic Range..... > 87 dB
 Noise Level (RMS RTI)..... < 3 µV
 Output Drive Impedance..... 50 Ω
 Grounding..... Case Grounding,
 Isolated from mounting surface

ORDERING INFORMATION AND ACCESSORIES

R1.5I-AST..... R1.5I-AST
 Cable (specify length in 'XX' m at end of PN)..... 1234 - X
 Magnetic Hold-Down..... MHR1.5I
 Amplifier Subsystems..... AE2A

Sensors include

NIST Calibration Certificate & Warranty

* AST — Auto Sensor Testing feature allows AE systems to control the sensor as a pulser and a receiver at the same time. It can therefore characterize its own condition as well as send out a simulated acoustic emission wave that other sensors can detect, so the condition of the nearby sensors also can be tested.



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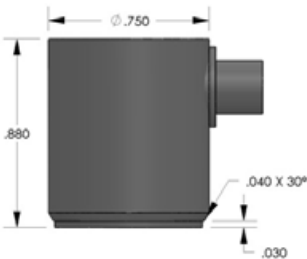
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PRODUCT DATA SHEET

R3α Sensor

General Purpose Sensor



DESCRIPTION AND FEATURES

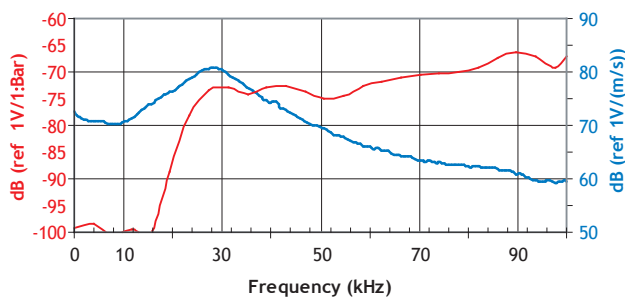
The R3α sensor cavity is machined from a solid stainless steel rod, making the sensor extremely rugged and reliable. The ceramic face electrically isolates the sensor from the structure to assure a low noise operation.

Most low frequency AE sensors are relatively large. However, the R3α sensor has the same compact size as our other Alpha series sensors and boasts a low frequency, 30 kHz resonant response. This feature makes it extremely useful in tight areas that require a low frequency sensor for testing.

The Alpha series family of sensors features SMA connectors versus the Microdot connectors found on MISTRAS' RX series of passive sensors. The Alpha series includes R3α, R6α, R15α, R30α, R50α, R80α and WSα sensors.

APPLICATIONS

This sensor is normally selected for structural health monitoring of small to medium concrete and geologic structures and for concrete and metal pipeline leak detection applications where there needs to be high acoustic background noise rejection and distances between sensors can be relatively close (tens of feet).



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	80 dB
Peak Sensitivity, Ref V/μbar	-63 dB
Operating Frequency Range	25-70 kHz
Resonant Frequency, Ref V/(m/s)	29 kHz
Resonant Frequency, Ref V/μbar	140 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-65 to 175°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.75" OD X 0.88" H 19 mm OD X 22.4 mm H
Weight	41 grams
Case Material	Stainless steel
Face Material	Ceramic
Connector	SMA
Connector Locations	Side
Seal	Epoxy

ORDERING INFORMATION AND ACCESSORIES

R3α	R3α or R3a
Magnetic Hold-Down	MHR15A
Amplifier subsystems	AE2A, AE5A or standard AE systems
Preamplifier	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234-X

Sensors include

NIST Calibration Certificate & Warranty



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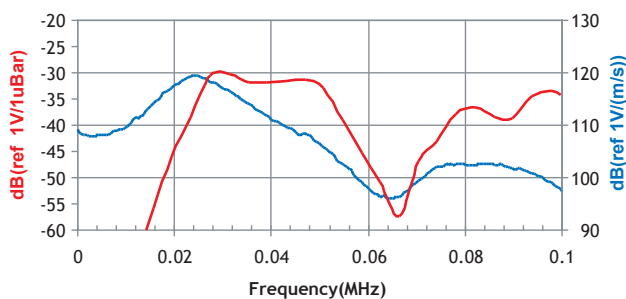
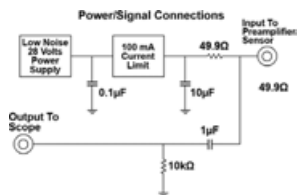
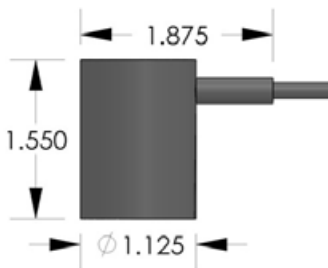
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PRODUCT DATA SHEET

R3I-AST Sensor

Integral Preamplifier Sensor



DESCRIPTION AND FEATURES

PAC's integral preamp sensors were specifically engineered to attain high sensitivity and have the capability to drive long cables without the need for a separate preamplifier. Incorporating a low-noise input, 40 dB preamplifier and a filter all inside the sensor housing, these transducers are completely enclosed in metal stainless steel (or aluminum) housings that are treated to minimize RFI/EMI interference. Care has also been taken to thermally isolate the critical input stage of the preamplifier in order to provide excellent temperature stability over the range of -35° to 75° C.

Their integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time throughout the test.

APPLICATIONS

Due to its high sensitivity and low resonant frequency properties, this sensor can be used for applications such as metal and FRP structures including pipelines or storage tanks in petroleum, refineries, chemical plants, and offshore platforms.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	120 dB
Peak Sensitivity, Ref V/μbar.....	-28 dB
Operating Frequency Range.....	10-40 kHz
Resonant Frequency, Ref V/(m/s).....	25 kHz
Resonant Frequency, Ref V/μbar.....	31 kHz
Directionality.....	+/-1.5 dB

Environmental

Temperature Range.....	-35 to 75°C
Shock Limit.....	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	1.13"OD X 1.54"H 29 mm OD X 39 mm H
Weight.....	147 grams with 1m cable
Case Material.....	Stainless Steel (304)
Face Material.....	Ceramic
Connector.....	BNC
Connector Locations.....	Side

Electrical

Gain.....	40 dB
Power Requirements.....	20-30 VDC @ 25 mA
Dynamic Range.....	> 87 dB
Noise Level (RMS RTI).....	< 3 μV
Output Drive Impedance.....	50 Ω
Grounding.....	Case Grounding, Isolated from mounting surface

ORDERING INFORMATION AND ACCESSORIES

R3I-AST.....	R3I-AST
Cable (specify length in 'XX' m at end of PN).....	1234 - X
Magnetic Hold-Down.....	MHR3I
Amplifier Subsystem.....	AE2A

Sensors include

NIST Calibration Certificate & Warranty

* AST — Auto Sensor Testing feature allows AE systems to control the sensor as a pulser and a receiver at the same time. It can therefore characterize its own condition as well as send out a simulated acoustic emission wave that other sensors can detect, so the condition of the nearby sensors also can be tested.



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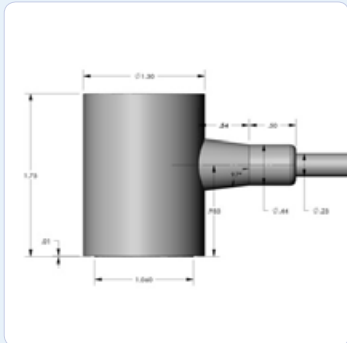
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PRODUCT DATA SHEET

R6-UC Sensor

Underwater Sensor



DESCRIPTION AND FEATURES

R6-UC is a resonant underwater sensor with very high sensitivity. The sensor features special polymer coatings making it 100% insulated and non conductive with an integral waterproof cable for underwater use. The sensor is tested to depths of 1000 psi.

APPLICATIONS

The sensor can be used for the structural health monitoring of submerged structures like offshore oil and gas platforms, ships etc. They can be used inside any liquid filled platforms like pipelines, chemical tanks or any other submerged structures.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 78 dB
 Peak Sensitivity, Ref V/ μ bar -66 dB
 Operating Frequency Range 35-100 KHz
 Resonant Frequency, Ref V/(m/s) 50 dB
 Resonant Frequency, Ref V/ μ bar 90 KHz

Environmental

Temperature Range -65 to 177°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

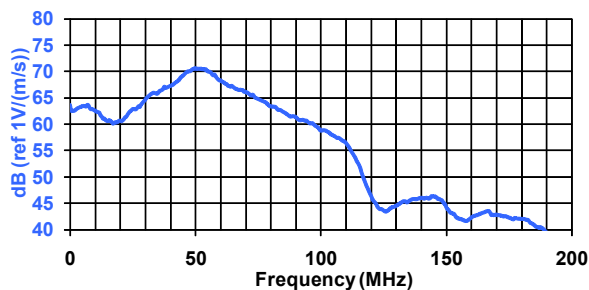
Dimensions 1.31"OD X 1.38"H
 33 mm OD X 35 mm H
 Weight 98 grams
 Case Material Stainless Steel/Epoxy
 Face Material Ceramic
 Connector BNC on integral cable
 Connector Locations Side

ORDERING INFORMATION AND ACCESSORIES

R6UC R6UC
 Cable (specify length in '-XX' m at end of PN) 1234-X
 Pre-amplifier 0/2/4, 2/4/6
 Preamp to System Cable (specify length in 'm') 1234-X
 Amplifier Subsystems AE2A, AE5A
 Other IS Sensors are available with various resonant frequencies.

Sensors include

NIST Calibration Certificate & Warranty



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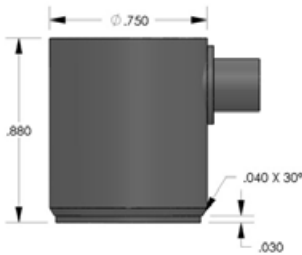
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PRODUCT DATA SHEET

R6α Sensor

General Purpose, 60 kHz Resonant Frequency Sensor



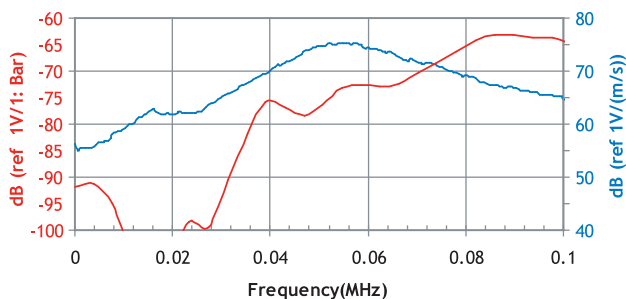
DESCRIPTION AND FEATURES

The R6α is a narrow band resonant sensor with a high sensitivity. The sensor cavity is machined from a solid stainless steel rod, making the sensor extremely rugged and reliable. The ceramic face along with a 30 degree chamfer to cavity electrically isolates the sensor cavity from the structure under test assuring a low noise operation.

The compact size of the sensor makes it readily suitable for deploying in tight spaces for monitoring. The Alpha series family of sensors features an SMA connector versus the Microdot connectors found on MISTRAS' RXX series of sensors. The alpha series includes R3α, R6α, R15α, R30α, R50α, R80α and WSα sensors.

APPLICATIONS

This sensor can be used on metal and FRP structures such as pipelines or storage tanks in petroleum, refineries, chemical plants, and offshore platforms, due to its high sensitivity and low resonance frequency properties.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	75 dB
Peak Sensitivity, Ref V/μbar	-64 dB
Operating Frequency Range	35-100 kHz
Resonant Frequency, Ref V/(m/s)	55 kHz
Resonant Frequency, Ref V/μbar	90 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-65 to 175°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.75" OD X 0.88" H 19 mm OD X 22.4 mm H
Weight	38 grams
Case Material	Stainless steel
Face Material	Ceramic
Connector	SMA
Connector Locations	Side
Seal	Epoxy

ORDERING INFORMATION AND ACCESSORIES

R6α	R6α or R6α
Magnetic Hold-Down	MHR15A
Sensor to Preamp Cable (1 or 2 meters)	1232-X-SMA
Amplifier subsystems ... AE2A, AE5A or standard AE systems	
Preamplifier	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234 - X

Sensors include

NIST Calibration Certificate & Warranty



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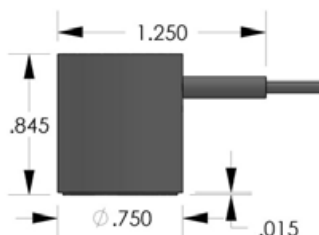
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R6D Sensor

General Purpose Differential Sensor

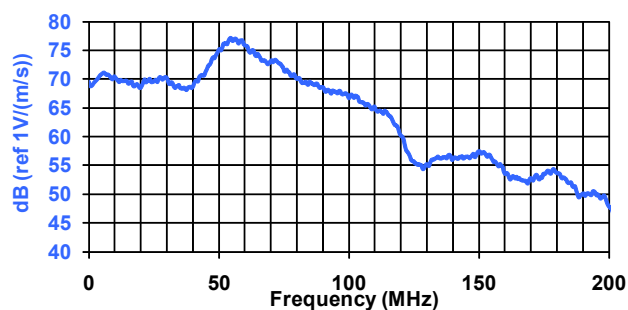


DESCRIPTION AND FEATURES

R6D is a differential sensor designed to isolate the sensing terminals electrically from the cavity. This electrical isolation makes the sensor particularly useful for applications where high background electrical noise is a major concern. It has a very good sensitivity and frequency response over the range of 35 – 100 kHz. The two signal leads from the sensing element feed into a differential pre-amplifier which eliminates common-mode noise resulting in a lower noise output from the pre-amplifier. This sensor features a rugged steel construction and a dual BNC connector with an integrated twin axial cable exiting on the side.

APPLICATIONS

The sensor can be used in applications that require very good EMI shielding, high sensitivity at low frequencies. Typical applications for the sensor include monitoring big power transformers, large steel and concrete structures.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	75 dB
Peak Sensitivity, Ref V/ μ bar.....	-64 dB
Operating Frequency Range.....	35-100 kHz
Resonant Frequency, Ref V/(m/s).....	55 kHz
Resonant Frequency, Ref V/ μ bar.....	90 kHz
Directionality.....	$\pm 1.5^\circ$

Environmental

Temperature Range -65 to 177°C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....	0.85"OD X 0.75"H
	22 mm OD X 19 mm H
Weight	34 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector.....	Dual BNC
Connector Locations.....	Side
Grounding.....	Internal (isolated from casing)

ORDERING INFORMATION AND ACCESSORIES

R6D	R6D
Cable (specify length '-XX' m at end of PN)	1 m
Preamp to System Cable (specify length in 'm')	1234-X
Magnetic Hold-Down	MHSTD
Amplifier subsystems ... AE2A, AE5A or standard AE systems	
Preamplifier	0/2/4, 2/4/6
Amplifier Subsystems	AE2A or AE5A

Sensors include

NIST Calibration Certificate & Warranty



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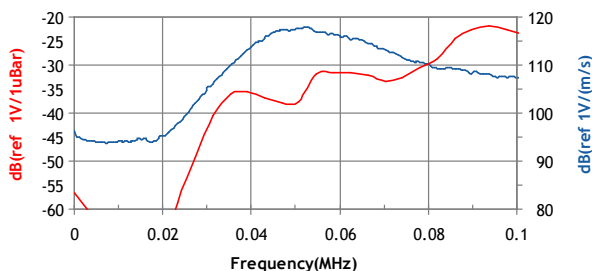
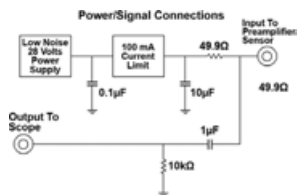
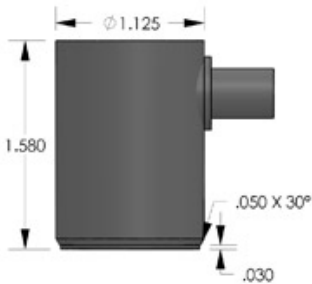
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PRODUCT DATA SHEET

R6I-AST Sensor

Integral Preamplifier Sensor



DESCRIPTION AND FEATURES

PAC's integral preamp sensors were specifically engineered to attain high sensitivity and have the capability to drive long cables without the need for a separate preamplifier. Incorporating a low-noise input, 40 dB preamplifier and a filter all inside the sensor housing, these transducers are completely enclosed in metal stainless steel (or aluminum) housings that are treated to minimize RFI/EMI interference. Care has also been taken to thermally isolate the critical input stage of the preamplifier in order to provide excellent temperature stability over the range of -35° to 75° C.

Their integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time throughout the test.

APPLICATIONS

Due to its high sensitivity and low resonant frequency properties, this sensor can be used for applications such as metal and FRP structures including pipelines or storage tanks in petroleum, refineries, chemical plants, and offshore platforms.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	117 dB
Peak Sensitivity, Ref V/μbar.....	-23 dB
Operating Frequency Range.....	40-100 kHz
Resonant Frequency, Ref V/(m/s).....	55 kHz
Resonant Frequency, Ref V/μbar.....	98 kHz
Directionality.....	+/-1.5 dB

Environmental

Temperature Range.....	-35 to 75°C
Shock Limit.....	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	1.13"OD X 1.6"H 29 mm OD X 40 mm H
Weight.....	.98 grams
Case Material.....	Stainless Steel (304)
Face Material.....	Ceramic
Connector.....	BNC
Connector Locations.....	Side

Electrical

Gain.....	40 dB
Power Requirements.....	20-30 VDC @ 25 mA
Dynamic Range.....	> 87 dB
Noise Level (RMS RTI).....	< 3 μV
Output Drive Impedance.....	50 Ω
Grounding.....	Case Grounding, Isolated from mounting surface

ORDERING INFORMATION AND ACCESSORIES

R6I-AST.....	R6I-AST
Cable (specify length in '-XX' m at end of PN).....	1234 - X
Magnetic Hold-Down.....	MHR6I
Amplifier Subsystems.....	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty

* AST — Auto Sensor Testing feature allows AE systems to control the sensor as a pulser and a receiver at the same time. It can therefore characterize its own condition as well as send out a simulated acoustic emission wave that other sensors can detect, so the condition of the nearby sensors also can be tested.



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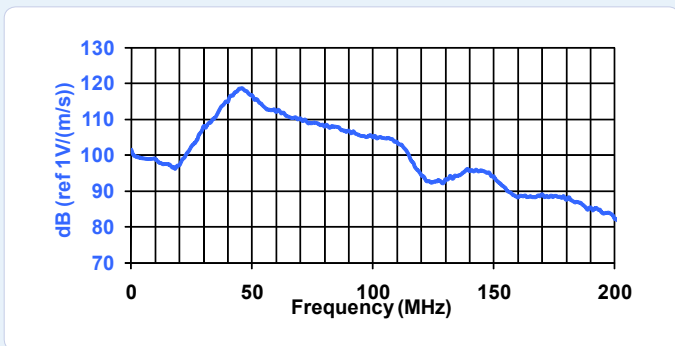
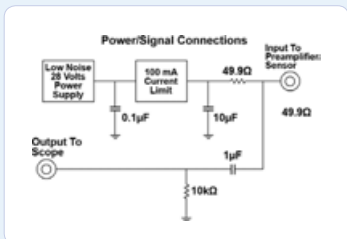
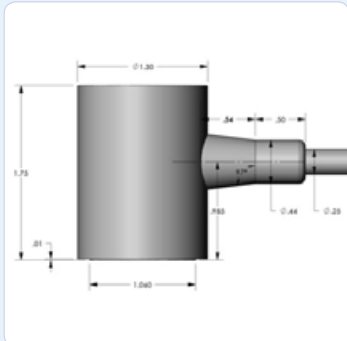
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PRODUCT DATA SHEET

R6I-UC Sensor

Underwater Sensor



DESCRIPTION AND FEATURES

R6I-UC is an underwater sensor with integrated preamplifier. It is a narrowband sensor with very high sensitivity featuring an integral preamplifier with a gain of 40 dB. The integrated electronics give the sensor a signal-to-drive capability for depths of 300 meters (1000 ft) or more. The sensors feature special polymer coatings making it 100% insulated and non conductive with an integral waterproof cable for underwater use. The sensor is tested to depths of 1000 psi.

APPLICATIONS

The sensor can be used for the structural health monitoring of submerged structures like offshore oil and gas platforms, ships etc. They can be used inside any liquid filled platforms like pipelines, chemical tanks or any other submerged structures.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	120 dB
Peak Sensitivity, Ref V/ μ bar.....	-26 dB
Operating Frequency Range.....	35-100 KHz
Resonant Frequency, Ref V/(m/s).....	50 dB
Resonant Frequency, Ref V/ μ bar.....	90 KHz
Directionality.....	+/- 1.5 dB

Environmental

Temperature Range.....	-30 to 65°C
Shock Limit.....	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	1.31"OD X 1.66"H
	33 mm OD X 42 mm H
Weight.....	116 grams
Case Material.....	Stainless Steel/Epoxy
Face Material.....	Ceramic
Connector.....	BNC on integral cable
Connector Locations.....	Side

Electrical

Gain.....	40 dB
Power Requirements.....	20-30 VDC @ 25 mA
Dynamic Range.....	> 87 dB
Noise Level (RMS RTI).....	< 3 μ V
Output Drive Impedance.....	50 Ω
Grounding.....	Case Grounding
	Isolated from mounting surface

ORDERING INFORMATION AND ACCESSORIES

R6I-UC.....	R6I-UC
Preamp to System Cable (specify length in 'm').....	1234-X
Amplifier Subsystems.....	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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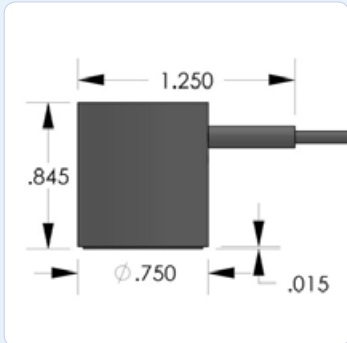
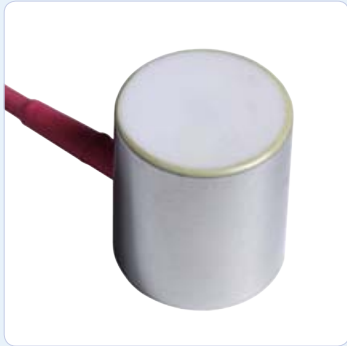
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PRODUCT DATA SHEET

R6S Sensor

General Purpose Sensor



DESCRIPTION AND FEATURES

R6S is a low frequency narrow band sensor with a very high sensitivity. It has a good frequency response over the range of 35 – 100 kHz. This sensor is an ideal candidate for applications requiring high sensitivity to AE signals at low frequencies. It features a rugged steel construction with an integrated coaxial cable exiting on the side with a BNC connector. The small size of the sensor makes it particularly suitable for mounting in tight spaces.

APPLICATIONS

This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. Narrow band sensors are well suited for applications requiring the sensor to pick up low level AE signals. It can be easily mounted using epoxy.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 75 dB
 Peak Sensitivity, Ref V/ μ bar -64 dB
 Operating Frequency Range 35-100 kHz
 Resonant Frequency, Ref V/(m/s) 55 kHz
 Resonant Frequency, Ref V/ μ bar 90 kHz
 Directionality +/-1.5 dB

Environmental

Temperature Range -65 to 177°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

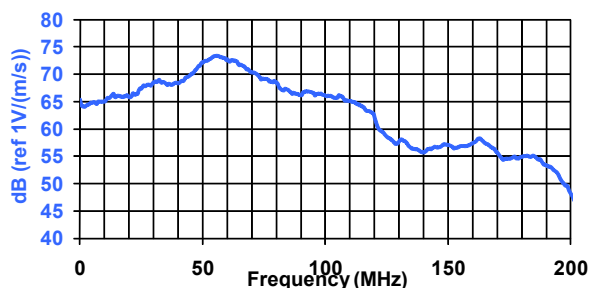
Dimensions 0.75" OD X 0.84" H
 19 mm OD X 22 mm H
 Weight 28 grams
 Case Material Stainless steel
 Face Material Ceramic
 Connector BNC
 Connector Locations Side

ORDERING INFORMATION AND ACCESSORIES

R6S R6S
 Cable (specify cable length 'XX' m at end of PN) 1 m
 Magnetic Hold-Down MHSTD
 Amplifier subsystems ... AE2A, AE5A or standard AE systems
 Preamplifier 0/2/4, 2/4/6
 Preamp to System Cable (specify length in 'm') 1234-X

Sensors include

NIST Calibration Certificate & Warranty



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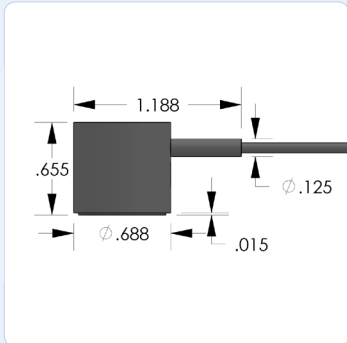
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PRODUCT DATA SHEET

R15-LT Sensor

Low Temperature Sensor

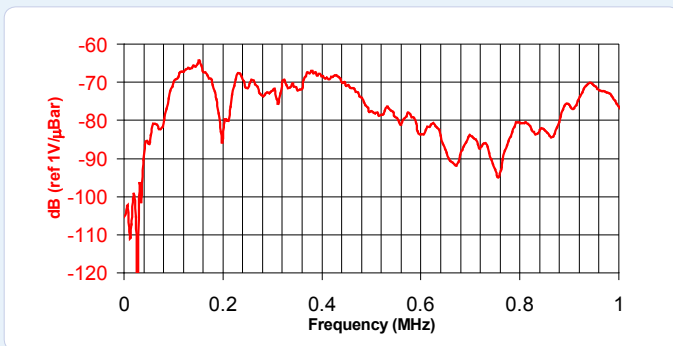


DESCRIPTION AND FEATURES

R15-LT is a low temperature sensor capable of operating in extreme environments. The sensor design features a rugged inconel body with a 2 ft long integrated hardline cable carefully chosen to withstand the severe thermal cycling. The hardline cable interfaces to a softline with a BNC connector. These sensors have been tested to work up to liquid Helium temperatures of -252° C (-423° F).

APPLICATIONS

The sensor can be used for structural health monitoring in cryogenic environments. Typical applications include monitoring cryogenic tanks used in rockets, space shuttles and other applications.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 69 dB
 Peak Sensitivity, Ref V/μbar -63 dB
 Operating Frequency Range 50-200 KHz
 Resonant Frequency, Ref V/(m/s) 140 kHz
 Resonant Frequency, Ref V/μbar 30 KHz
 Directionality +/- 1.5 dB

Environmental

Temperature Range -200 to 200°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 0.8" OD X 0.8" H
 20 mm OD X 20 mm H
 Weight 26 grams
 Case Material Stainless Steel
 Face Material Ceramic
 Connector Integrated Hardline, BNC on Coax
 Connector Locations Side

ORDERING INFORMATION AND ACCESSORIES

R15-LT R15-LT
 Cable (specify length in 'XX' m at end of PN) 1234-X
 Pre-amplifier 0/2/4, 2/4/6
 Preamp to System Cable (specify length in 'm') 1234-X
 Amplifier Subsystems AE2A or AE5A

Sensors include

NIST Calibration Certificate & Warranty



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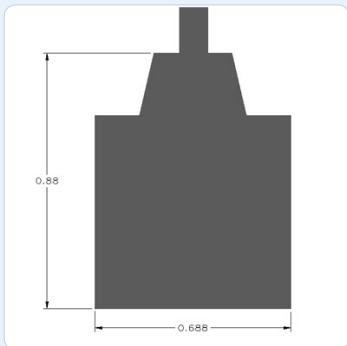
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PRODUCT DATA SHEET

R15-UG Sensor

Underground Sensor



DESCRIPTION AND FEATURES

R15-UG is a resonant underground sensor with very high sensitivity. The sensor features special polymer coatings making it 100% insulated and non conductive with an integral waterproof cable. The sensor is tested to depths of 1000 psi.

APPLICATIONS

The sensor can be used for the structural health monitoring of underground structures like pipelines, oil tanks, tunnels etc. They can also be used for monitoring geological structures and seismic activity.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 69 dB
 Peak Sensitivity, Ref V/ μ bar -63 dB
 Operating Frequency Range 50-200 KHz
 Resonant Frequency, Ref V/(m/s) 75 dB
 Resonant Frequency, Ref V/ μ bar 150 KHz
 Directionality +/- 1.5 dB

Environmental

Temperature Range -35 to 75°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

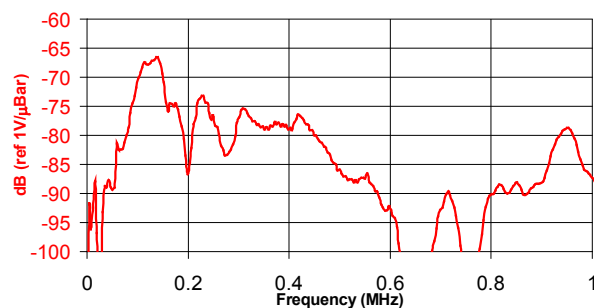
Dimensions 0.69" OD X 0.68" H
 18 mm OD X 17 mm H
 Weight 26 grams
 Case Material Stainless Steel/Epoxy
 Face Material Ceramic
 Connector BNC on integral cable
 Connector Locations Top (optional side exit)

ORDERING INFORMATION AND ACCESSORIES

R15-UG R15-UG
 Cable (specify length in 'XX' m at end of PN) 1234-X
 Pre-amplifiers 0/2/4, 2/4/6
 Preamp to System Cable (specify length in 'm') 1234-X
 Amplifier Subsystems AE2A or AE5A

Sensors include

NIST Calibration Certificate & Warranty



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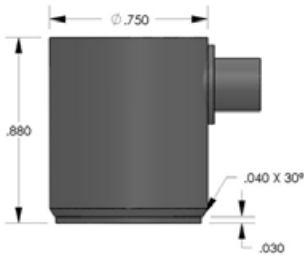
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PRODUCT DATA SHEET

R15α Sensor

General Purpose Sensor



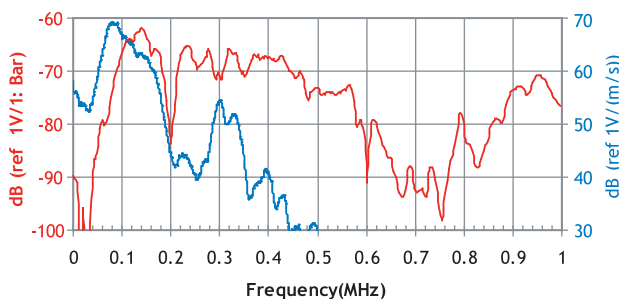
DESCRIPTION AND FEATURES

The R15α is a narrow band resonant sensor with a high sensitivity. The sensor cavity is machined from a solid stainless steel rod, making the sensor extremely rugged and reliable. The ceramic face along with a 30 degree chamfer to cavity electrically isolates the sensor cavity from the structure under test assuring a low noise operation.

The compact size of the sensor makes it readily suitable for deploying in tight spaces for monitoring. The Alpha series family of sensors features an SMA connector versus the Microdot connectors found on MISTRAS' RXX series of sensors. The alpha series includes R3α, R6α, R15α, R30α, R50α, R80α and WSα sensors.

APPLICATIONS

This general purpose sensor provides a good combination of high sensitivity and low-frequency rejection. These properties make the sensor very useful for monitoring common structures such as pipelines, vessels, bridges, and storage tanks in petroleum, refineries, chemical plants, offshore platforms, as well as factory and process monitoring applications.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	80 dB
Peak Sensitivity, Ref V/μbar	-63 dB
Operating Frequency Range	50-400 kHz
Resonant Frequency, Ref V/(m/s)	75 kHz
Resonant Frequency, Ref V/μbar	150 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-65 to 175°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.75"OD X 0.88"H
	19 mm OD X 22.4 mm H
Weight	34 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector	SMA
Connector Locations.....	Side
Seal.....	Epoxy
Sensor to Preamp Cable (1 or 2 meters)	1232-X-SMA

ORDERING INFORMATION AND ACCESSORIES

R15α	R15α or R15a
Magnetic Hold-Down	MHR15A
Pre-amplifier.....	0/2/4, 2/4/6
Amplifier subsystems ...	AE2A, AE5A or standard AE systems
Preamp to System Cable (specify length in 'm')	1234-X

Sensors include

NIST Calibration Certificate & Warranty



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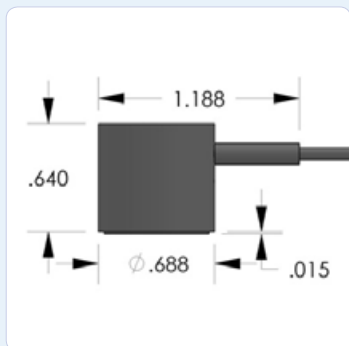
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PRODUCT DATA SHEET

R15D Sensor

General Purpose Differential Sensor

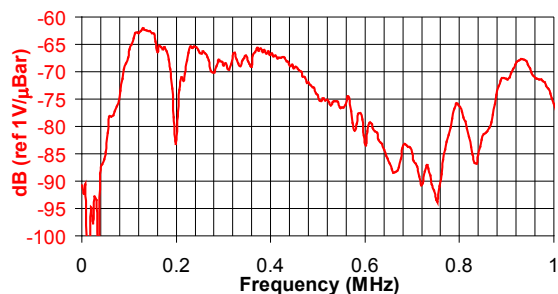


DESCRIPTION AND FEATURES

R15D is a differential sensor designed to isolate the sensing terminals electrically from the cavity. This electrical isolation makes the sensor particularly useful for applications where high background electrical noise is a major concern. It has a very good sensitivity and frequency response over the range of 50 – 400 kHz. The two signal leads from the sensing element feed into a differential pre-amplifier which eliminates common-mode noise resulting in a lower noise output from the pre-amplifier. This sensor features a rugged steel construction and a dual BNC connector with an integrated twin axial cable exiting on the side.

APPLICATIONS

The sensor can be used in applications that require very good EMI shielding, high sensitivity. Typical applications for the sensor include monitoring big power transformers, large steel and concrete structures.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	58 dB
Peak Sensitivity, Ref V/μbar	-62 dB
Operating Frequency Range	50-400 kHz
Resonant Frequency, Ref V/(m/s)	75 kHz
Resonant Frequency, Ref V/μbar	150 kHz

Environmental

Temperature Range	-65 to 177°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.7"OD X 0.65"H
	18 mm OD X 17 mm H
Weight	25 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector	Dual BNC
Connector Locations.....	Side
Grounding.....	Internal (isolated from casing)

ORDERING INFORMATION AND ACCESSORIES

R15D	R15D
Cable (specify cable length 'XX' m at end of PN).....	1 m
Preamp to System Cable (specify length in 'm')	1234-X
Magnetic Hold-Down	MHSTD
Pre-amplifier.....	0/2/4, 2/4/6, IL40D
Amplifier subsystems ...	AE2A, AE5A or standard AE systems

Sensors include

NIST Calibration Certificate & Warranty



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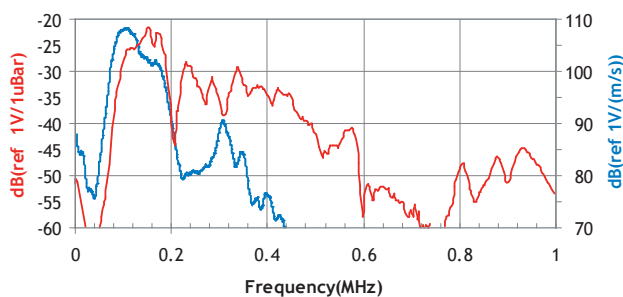
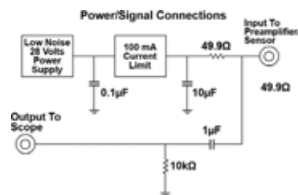
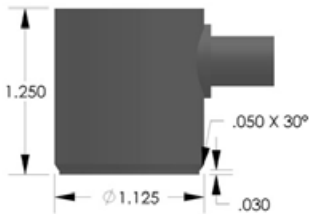
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PRODUCT DATA SHEET

R15I-AST Sensor

Integral Preamplifier Sensor



DESCRIPTION AND FEATURES

PAC's integral preamp sensors were specifically engineered to attain high sensitivity and have the capability to drive long cables without the need for a separate preamplifier. Incorporating a low-noise input, 40 dB preamplifier and a filter all inside the sensor housing, these transducers are completely enclosed in metal stainless steel (or aluminum) housings that are treated to minimize RFI/EMI interference. Care has also been taken to thermally isolate the critical input stage of the preamplifier in order to provide excellent temperature stability over the range of -35° to 75° C.

Their integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time throughout the test.

APPLICATIONS

This general purpose sensor provides a good mix of high sensitivity and high low frequency rejection. These properties make it very useful for monitoring common structures such as pipelines, vessels, bridges, and storage tanks in petroleum, refineries, chemical plants, offshore platforms, as well as factory and process monitoring applications. It is PAC's most popular and highest volume selling sensor.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	109 dB
Peak Sensitivity, Ref V/μbar.....	-22 dB
Operating Frequency Range.....	80-200 kHz
Resonant Frequency, Ref V/(m/s).....	75 kHz
Resonant Frequency, Ref V/μbar.....	150 kHz
Directionality.....	+/-1.5 dB

Environmental

Temperature Range.....	-35 to 75°C
Shock Limit.....	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	1.13"OD X 1.23"H 29 mm OD X 31 mm H
Weight.....	70 grams
Case Material.....	Stainless Steel (304)
Face Material.....	Ceramic
Connector.....	BNC
Connector Locations.....	Side

Electrical

Gain.....	40 dB
Power Requirements.....	20-30 VDC @ 25 mA
Dynamic Range.....	> 87 dB
Noise Level (RMS RTI).....	< 3 μV
Output Drive Impedance.....	50 Ω
Grounding.....	Case Grounding, Isolated from mounting surface

ORDERING INFORMATION AND ACCESSORIES

R15I-AST.....	R15I-AST
Cable (specify length in 'XX' m at end of PN).....	1234 - X
Magnetic Hold-Down.....	MHR15I
Amplifier Subsystems.....	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty

* AST — Auto Sensor Testing feature allows AE systems to control the sensor as a pulser and a receiver at the same time. It can therefore characterize its own condition as well as send out a simulated acoustic emission wave that other sensors can detect, so the condition of the nearby sensors also can be tested.



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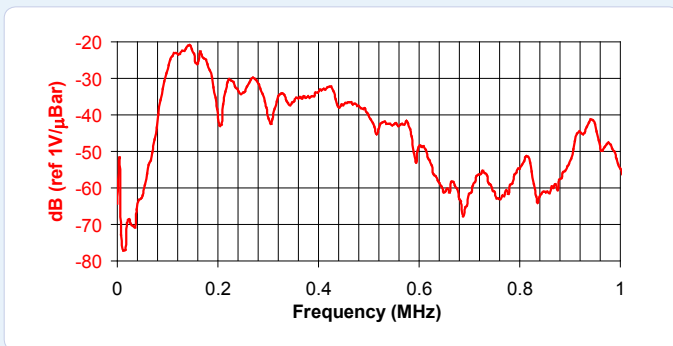
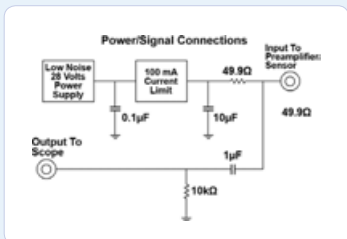
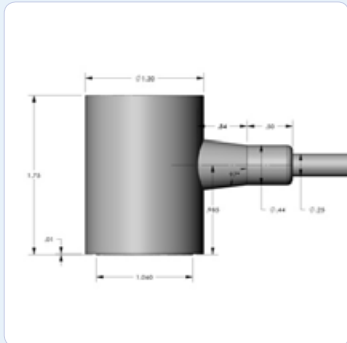
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PRODUCT DATA SHEET

R15I-UC Sensor

Underwater Sensor



DESCRIPTION AND FEATURES

R15I-UC is an underwater sensor with integrated preamplifier. It is a narrowband sensor with very high sensitivity featuring an integral preamplifier with a gain of 40 dB. The integrated electronics give the sensor a signal-to-drive capability for depths of 300 meters (1000 ft) or more. The sensors feature special polymer coatings making it 100% insulated and non-conductive with an integral waterproof cable for underwater use. The sensor is tested to depths of 1000 psi.

APPLICATIONS

The sensor can be used for the structural health monitoring of submerged structures like offshore oil and gas platforms, ships etc. They can be used inside any liquid filled platforms like pipelines, chemical tanks or any other submerged structures.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 108 dB
 Peak Sensitivity, Ref V/µbar -24 dB
 Operating Frequency Range 50-200 KHz
 Resonant Frequency, Ref V/(m/s) 75 dB
 Resonant Frequency, Ref V/µbar 150 KHz
 Directionality +/- 1.5 dB

Environmental

Temperature Range -30 to 65°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 1.31" OD X 1.66" H
 33 mm OD X 42 mm H
 Weight 98 grams
 Case Material Stainless Steel/Epoxy
 Face Material Ceramic
 Connector BNC on integral cable
 Connector Locations Side

Electrical

Gain 40 dB
 Power Requirements 20-30 VDC @ 25 mA
 Dynamic Range > 87 dB
 Noise Level (RMS RTI) < 3 µV
 Output Drive Impedance 50 Ω
 Grounding Case Grounding
 Isolated from mounting surface

ORDERING INFORMATION AND ACCESSORIES

R15I-UC R15I-UC
 Amplifier Subsystems AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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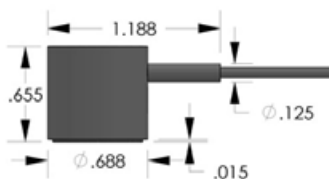
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R15S Sensor

General Purpose Sensor

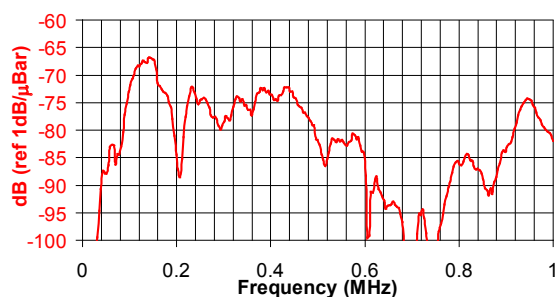


DESCRIPTION AND FEATURES

R15S is a narrow band sensor with a very high sensitivity. It has a very good frequency response over the range of 50-400 kHz. This sensor is an ideal candidate for applications requiring high sensitivity to AE signals at medium frequencies. This sensor features a rugged steel construction with an integrated coaxial cable exiting on the side with a BNC connector. The small size of the sensor makes it particularly suitable for mounting in tight spaces.

APPLICATIONS

This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. Narrow band sensors are well suited for applications requiring the sensor to pick up low level AE signals. It can be easily mounted using epoxy.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	69 dB
Peak Sensitivity, Ref V/ μ bar.....	-63 dB
Operating Frequency Range.....	50-400 kHz
Resonant Frequency, Ref V/(m/s).....	75 kHz
Resonant Frequency, Ref V/ μ bar.....	150 kHz
Directionality.....	± 1.5 dB

Environmental

Temperature Range -65 to 177°C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....0.65" OD X 0.7" H
16.5 mm OD X 18 mm H
Weight.....34 grams
Case Material.....Stainless steel
Face Material.....Ceramic
Connector.....BNC
Connector Locations.....Side

ORDERING INFORMATION AND ACCESSORIES

R15S.....	R15S.....
Cable (specify length 'XX' m at end of PN)	1 m
Magnetic Hold-Down	MHSTD
Pre-Amplifier	0/2/4, 2/4/6
Amplifier subsystems ... AE2A, AE5A or standard AE systems	

Sensors include

NIST Calibration Certificate & Warranty



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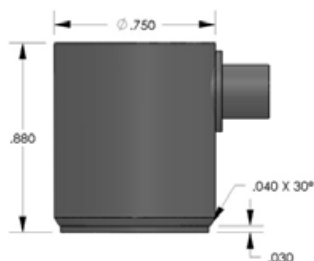
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PRODUCT DATA SHEET

R30α Sensor

General Purpose, 300 kHz Resonant Frequency Sensor



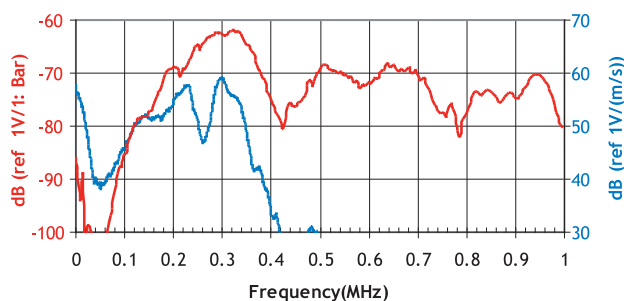
DESCRIPTION AND FEATURES

The R30α is a narrow band resonant sensor with a high sensitivity. The sensor cavity is machined from a solid stainless steel rod, making the sensor extremely rugged and reliable. The ceramic face along with a 30 degree chamfer to cavity electrically isolates the sensor cavity from the structure under test assuring a low noise operation.

The compact size of the sensor makes it readily suitable for deploying in tight spaces for monitoring. The Alpha series family of sensors features an SMA connector versus the Microdot connectors found on MISTRAS' RXX series of sensors. The alpha series includes R3α, R6α, R15α, R30α, R50α, R80α and WSα sensors.

APPLICATIONS

This sensor provides additional noise rejection for applications such as production line process monitoring applications such as punch press monitoring, forming operations, stamping, applications and process control applications such as leak detection within process control plants in the presence of flow and process noises.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	58 dB
Peak Sensitivity, Ref V/μbar.....	-62 dB
Operating Frequency Range.....	150-400 kHz
Resonant Frequency, Ref V/(m/s).....	300 kHz
Resonant Frequency, Ref V/μbar.....	330 kHz

Environmental

Temperature Range.....	-65 to 175°C
Shock Limit.....	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.75"OD X 0.88" H 19 mm OD X 22.4 mm H
Weight.....	29 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector.....	SMA
Seal.....	Epoxy
Sensor to Preamp Cable (1 or 2 meters).....	1232-X-SMA

ORDERING INFORMATION AND ACCESSORIES

R30α.....	R30α or R30α
Cable (Specify length in 'XX' m).....	1234-SMA/BNC-X
Magnetic Hold-Down.....	MHR15A
Amplifier subsystems ... AE2A, AE5A or standard AE systems	
Preamplifier.....	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm').....	1234 - X

Sensors include

NIST Calibration Certificate & Warranty



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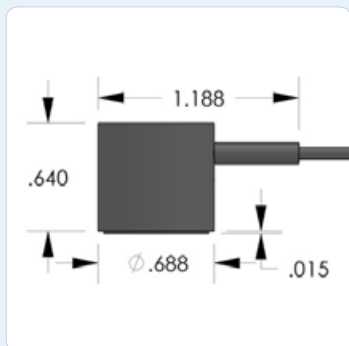
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PRODUCT DATA SHEET

R30D Sensor

General Purpose Differential Sensor

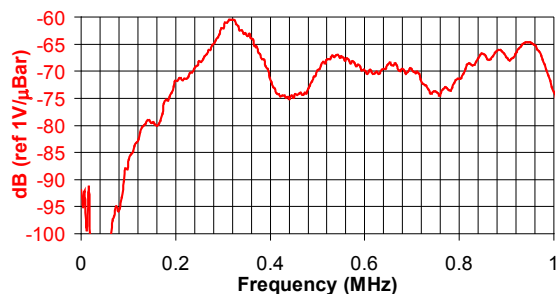


DESCRIPTION AND FEATURES

R30D is a differential sensor designed to isolate the sensing terminals electrically from the cavity. This electrical isolation makes the sensor particularly useful for applications where high background electrical noise is a major concern. It has a very good sensitivity and frequency response over the range of 150 – 400 kHz. The two signal leads from the sensing element feed into a differential pre-amplifier which eliminates common-mode noise resulting in a lower noise output from the pre-amplifier. This sensor features a rugged steel construction and a dual BNC connector with an integrated twin axial cable exiting on the side.

APPLICATIONS

The sensor can be used in applications that require very good EMI shielding, high sensitivity. Typical applications for the sensor include monitoring big power transformers, large steel and concrete structures.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	58 dB
Peak Sensitivity, Ref V/μbar	-62 dB
Operating Frequency Range	150-400 kHz
Resonant Frequency, Ref V/(m/s)	300 kHz
Resonant Frequency, Ref V/μbar	330 kHz

Environmental

Temperature Range	-65 to 177°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.7"OD X 0.65"H
	18 mm OD X 17 mm H
Weight	20 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector	Dual BNC
Connector Locations.....	Side
Grounding.....	Internal (Isolated from casing)

ORDERING INFORMATION AND ACCESSORIES

R30D	R30D
Cable (specify length in 'XX' m at end of PN)	1 m
Preamp to System Cable (specify length in 'm')	1234-X
Magnetic Hold-Down	MHSTD
Preamplifier	0/2/4, 2/4/6, IL4D
Amplifier subsystems ...	AE2A, AE5A or standard AE systems

Sensors include

NIST Calibration Certificate & Warranty



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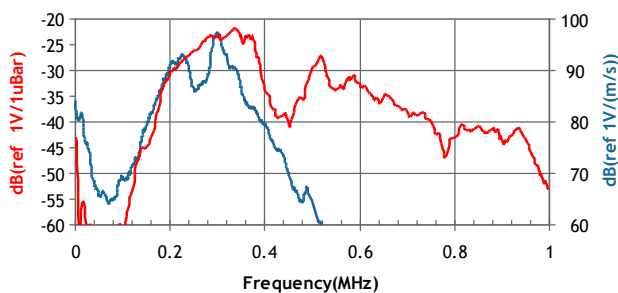
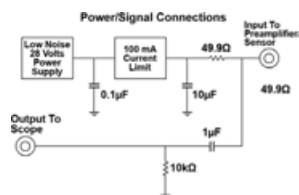
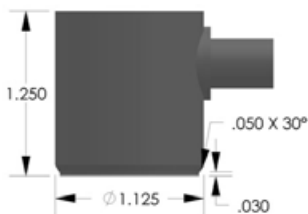
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PRODUCT DATA SHEET

R30I-AST Sensor

Integral Preamplifier Sensor



DESCRIPTION AND FEATURES

PAC's integral preamp sensors were specifically engineered to attain high sensitivity and have the capability to drive long cables without the need for a separate preamplifier. Incorporating a low-noise input, 40 dB preamplifier and a filter all inside the sensor housing, these transducers are completely enclosed in metal stainless steel (or aluminum) housings that are treated to minimize RFI/EMI interference. Care has also been taken to thermally isolate the critical input stage of the preamplifier in order to provide excellent temperature stability over the range of -35° to 75° C.

Their integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time throughout the test.

APPLICATIONS

This sensor provides additional noise rejection for applications such as production line process monitoring including punch press monitoring, forming operations and stamping, and process control applications such as leak detection within process control plants in the presence of flow and process noises.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	97 dB
Peak Sensitivity, Ref V/μbar	-22 dB
Operating Frequency Range	200-450 kHz
Resonant Frequency, Ref V/(m/s)	300 kHz
Resonant Frequency, Ref V/μbar	350 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-35 to 75°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	1.13"OD X 1.23"H 29 mm OD X 31 mm H
Weight	75 grams
Case Material	Stainless Steel (304)
Face Material	Ceramic
Connector	BNC
Connector Locations	Side

Electrical

Gain	40 dB
Power Requirements	20-30 VDC @ 25 mA
Dynamic Range	> 87 dB
Noise Level (RMS RTI)	< 3 μV
Output Drive Impedance	50 Ω
Grounding	Case Grounding, Isolated from mounting surface

ORDERING INFORMATION AND ACCESSORIES

R30I-AST	R30I-AST
Cable (specify length in 'XX' m at end of PN)	1234 - X
Magnetic Hold-Down	MHR30I
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty

* AST — Auto Sensor Testing feature allows AE systems to control the sensor as a pulser and a receiver at the same time. It can therefore characterize its own condition as well as send out a simulated acoustic emission wave that other sensors can detect, so the condition of the nearby sensors also can be tested.



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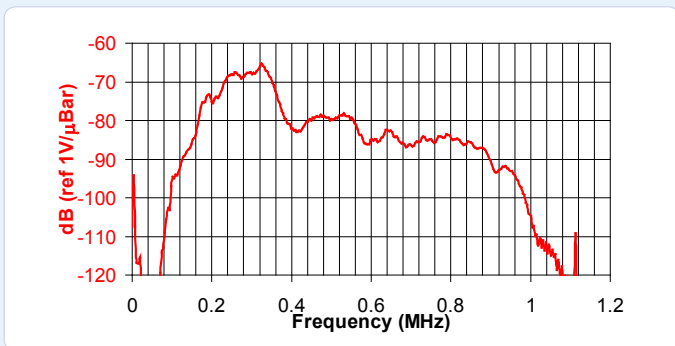
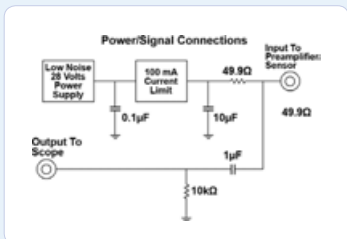
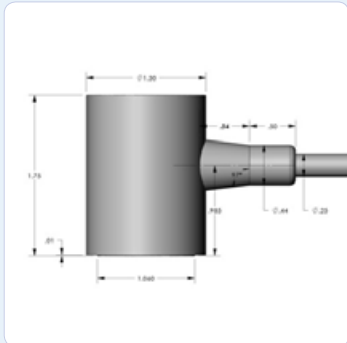
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PRODUCT DATA SHEET

R30I-UC Sensor

Underwater Sensor



DESCRIPTION AND FEATURES

R30I-UC is an underwater sensor with integrated preamplifier. It is a narrowband sensor with very high sensitivity featuring an integral preamplifier with a gain of 40 dB. The integrated electronics give the sensor a signal-to-drive capability for depths of 300 meters (1000 ft) or more. The sensors feature special polymer coatings making it 100% insulated and non conductive with an integral waterproof cable for underwater use. The sensor is tested to depths of 1000 psi.

APPLICATIONS

The sensor can be used for the structural health monitoring of submerged structures like offshore oil and gas platforms, ships etc. They can be used inside any liquid filled platforms like pipelines, chemical tanks or any other submerged structures.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 98 dB
 Peak Sensitivity, Ref V/μbar -24 dB
 Operating Frequency Range 200-400 KHz
 Resonant Frequency, Ref V/(m/s) 225 dB
 Resonant Frequency, Ref V/μbar 350 KHz
 Directionality +/- 1.5 dB

Environmental

Temperature Range -30 to 65°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 1.31"OD X 1.38"H
 33 mm OD X 35 mm H
 Weight 180 grams
 Case Material Stainless Steel/Epoxy
 Face Material Ceramic
 Connector BNC on integral cable
 Connector Locations Side

Electrical

Gain 40 dB
 Power Requirements 20-30 VDC @ 25 mA
 Dynamic Range > 87 dB
 Noise Level (RMS RTI) < 3 μV
 Output Drive Impedance 50 Ω
 Grounding Case Grounding
 Isolated from mounting surface

ORDERING INFORMATION AND ACCESSORIES

R30I-UC R30I-UC
 Amplifier Subsystems AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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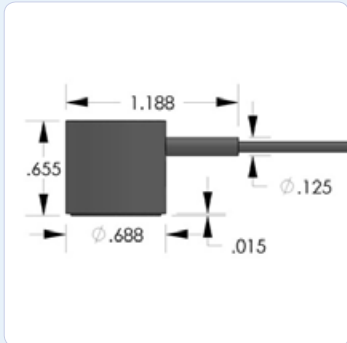
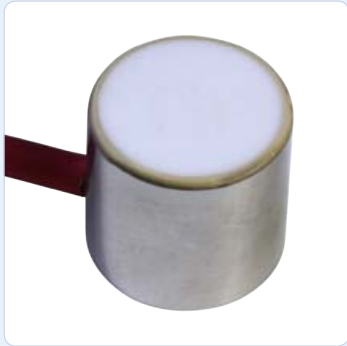
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PRODUCT DATA SHEET

R30S Sensor

General Purpose Sensor

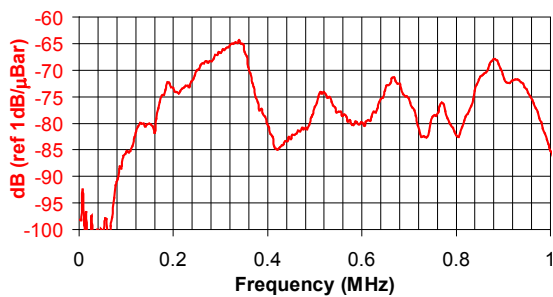


DESCRIPTION AND FEATURES

R30S is designed as a narrow band sensor to have a very high sensitivity to AE signals. It has a very good frequency response over the range of 150 – 400 kHz. This sensor features a rugged steel construction with an integrated coaxial cable exiting from the side with a BNC connector. The small size of the sensor makes it particularly suitable for mounting in tight spaces.

APPLICATIONS

This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. Narrow band sensors are well suited for applications requiring the sensor to pick up low level AE signals. It can be easily mounted using epoxy.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 58 dB
 Peak Sensitivity, Ref V/μbar -62 dB
 Operating Frequency Range 150-400 kHz
 Resonant Frequency, Ref V/(m/s) 300 kHz
 Resonant Frequency, Ref V/μbar 330 kHz

Environmental

Temperature Range -65 to 177°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 0.7" OD X 0.65" H
 19 mm OD X 17 mm H
 Weight
 Case Material Stainless steel
 Face Material Ceramic
 Connector BNC
 Connector Locations Side

ORDERING INFORMATION AND ACCESSORIES

R30S R30S
 Cable (specify cable length 'XX' m) 1 m
 Magnetic Hold-Down MHSTD
 Pre-Amplifier 0/2/4, 2/4/6
 Amplifier subsystems ... AE2A, AE5A or standard AE systems
 Preamp to System Cable (specify length in 'm') 1234-X

Sensors include

NIST Calibration Certificate & Warranty



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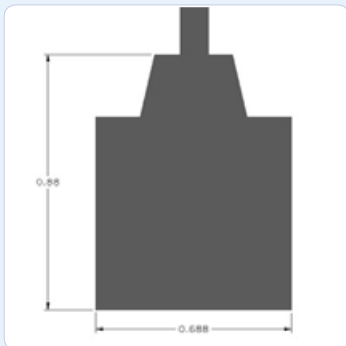
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PRODUCT DATA SHEET

R50-UG Sensor

Underground Sensor



DESCRIPTION AND FEATURES

R50-UG is an underground sensor with very high sensitivity and good bandwidth. The sensor features special polymer coatings making it 100% insulated and non conductive with an integral waterproof cable. The sensor is tested to depths of 1000 psi. The sensor can be used in applications requiring good bandwidth for frequency analysis of the AE signals.

APPLICATIONS

The sensor can be used for the structural health monitoring of underground structures like pipelines, oil tanks, tunnels etc. They can also be used for monitoring geological structures and seismic activity.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 62 dB
 Peak Sensitivity, Ref V/ μ bar -65 dB
 Operating Frequency Range 150-650 KHz
 Resonant Frequency, Ref V/(m/s) 100 dB
 Resonant Frequency, Ref V/ μ bar 500 KHz
 Directionality +/- 1.5 dB

Environmental

Temperature Range -35 to 75°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

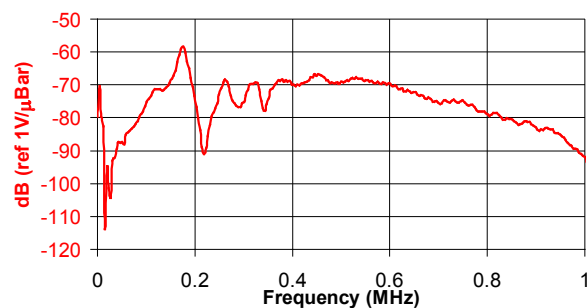
Dimensions 0.69"OD X 0.68"H
 18 mm OD X 17 mm H
 Weight 24 grams
 Case Material Stainless Steel/Epoxy
 Face Material Ceramic
 Connector BNC on integral cable
 Connector Locations Top (optional side exit)

ORDERING INFORMATION AND ACCESSORIES

R50-UG R50-UG
 Cable (specify cable length in 'm') 1234-X
 Pre-amplifiers 0/2/4, 2/4/6
 Preamp to System Cable (specify length in 'm') 1234-X
 Amplifier Subsystems AE2A or AE5A

Sensors include

NIST Calibration Certificate & Warranty



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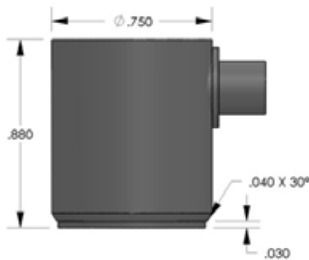
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PRODUCT DATA SHEET

R50α Sensor

General Purpose Sensor



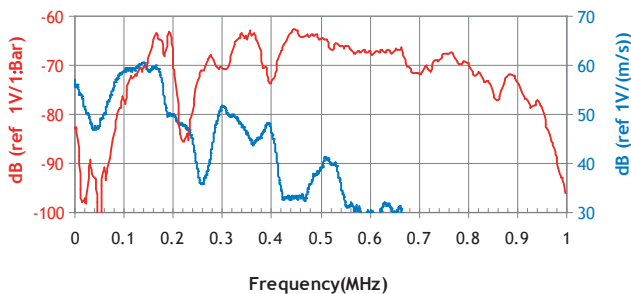
DESCRIPTION AND FEATURES

The R50α is a narrow band resonant sensor with a high sensitivity. The sensor cavity is machined from a solid stainless steel rod, making the sensor extremely rugged and reliable. The ceramic face along with a 30 degree chamfer to cavity electrically isolates the sensor cavity from the structure under test assuring a low noise operation.

The compact size of the sensor makes it readily suitable for deploying in tight spaces for monitoring. The Alpha series family of sensors features an SMA connector versus the Microdot connectors found on MISTRAS' RXX series of sensors. The alpha series includes R3α, R6α, R15α, R30α, R50α, R80α and WSα sensors.

APPLICATIONS

This sensor is useful in very noisy plant and process monitoring applications and is particularly suited to such applications as welding monitoring and control.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	62 dB
Peak Sensitivity, Ref V/μbar.....	-62 dB
Operating Frequency Range.....	150-700 kHz
Resonant Frequency, Ref V/(m/s).....	100 kHz
Resonant Frequency, Ref V/μbar.....	500 kHz

Environmental

Temperature Range.....	-65 to 175°C
Shock Limit.....	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.75"OD X 0.88"H 19 mm OD X 22.4 mm H
Weight.....	32 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector.....	SMA
Connector Locations.....	Side
Seal.....	Epoxy

ORDERING INFORMATION AND ACCESSORIES

R50α	R50α or R50a
Magnetic Hold-Down	MHR15A
Sensor to Preamp Cable (1 or 2 meters)	1232-X-SMA
Amplifier subsystems ... AE2A, AE5A or standard AE systems	
Preamplifier	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234 - X

Sensors include

NIST Calibration Certificate & Warranty



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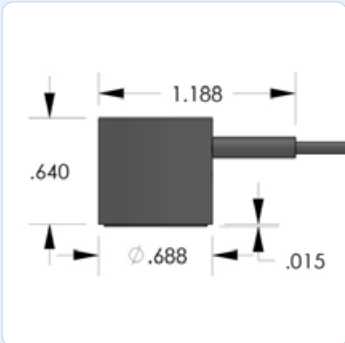
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PRODUCT DATA SHEET

R50D Sensor

General Purpose Differential Sensor

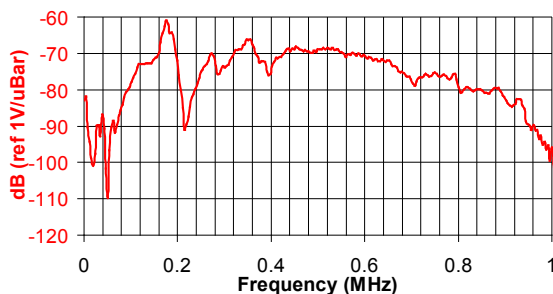


DESCRIPTION AND FEATURES

R50D is a differential sensor designed to isolate the sensing terminals electrically from the cavity. This electrical isolation makes the sensor particularly useful for applications where high background electrical noise is a major concern. It has a very good sensitivity and frequency response over the range of 100 – 700 kHz. The two signal leads from the sensing element feed into a differential pre-amplifier which eliminates common-mode noise resulting in a lower noise output from the pre-amplifier. This sensor features a rugged steel construction and a dual BNC connector with an integrated twin axial cable exiting on the side.

APPLICATIONS

The sensor can be used in applications that require very good EMI shielding, high sensitivity. Typical applications for the sensor include monitoring big power transformers, large steel and concrete structures.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 62 dB
 Peak Sensitivity, Ref V/ μ bar -62 dB
 Operating Frequency Range 100-700 kHz
 Resonant Frequency, Ref V/(m/s) 100 kHz
 Resonant Frequency, Ref V/ μ bar 500 kHz

Environmental

Temperature Range -65 to 177°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 0.7" OD X 0.65" H
 18 mm OD X 17 mm H
 Weight
 Case Material Stainless steel
 Face Material Ceramic
 Connector Dual BNC
 Connector Locations Side
 Grounding Internal (isolated from casing)

ORDERING INFORMATION AND ACCESSORIES

R50D R50D
 Cable (specify cable length 'XX' m at end of PN) 1 m
 Preamp to System Cable (specify length in 'm') 1234-X
 Magnetic Hold-Down MHSTD
 Pre-amplifier 0/2/4, 2/4/6
 Amplifier subsystems ... AE2A, AE5A or standard AE systems

Sensors include

NIST Calibration Certificate & Warranty



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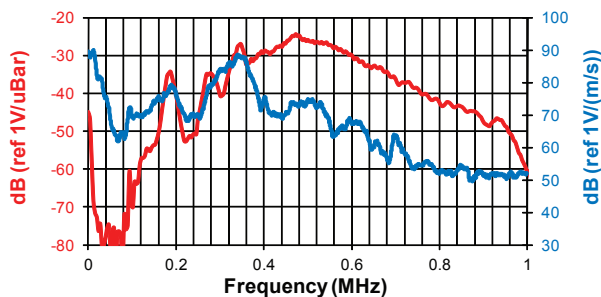
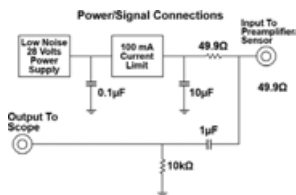
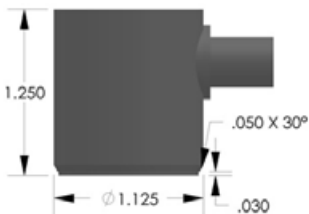
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PRODUCT DATA SHEET

R50I-AST Sensor

Integral Preamplifier Sensor



DESCRIPTION AND FEATURES

PAC's integral preamp sensors were specifically engineered to attain high sensitivity and have the capability to drive long cables without the need for a separate preamplifier. Incorporating a low-noise input, 40 dB preamplifier and a filter all inside the sensor housing, these transducers are completely enclosed in metal stainless steel (or aluminum) housings that are treated to minimize RFI/EMI interference. Care has also been taken to thermally isolate the critical input stage of the preamplifier in order to provide excellent temperature stability over the range of -35° to 75° C.

Their integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time throughout the test.

APPLICATIONS

This sensor is useful in very noisy plant and process monitoring applications and is particularly well suited to such applications as welding monitoring and control.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	88 dB
Peak Sensitivity, Ref V/μbar.....	-26 dB
Operating Frequency Range.....	300-550 kHz
Resonant Frequency, Ref V/(m/s).....	320 kHz
Resonant Frequency, Ref V/μbar.....	500 kHz
Directionality.....	+/-1.5 dB

Environmental

Temperature Range.....	-35 to 75°C
Shock Limit.....	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	1.125"OD X 1.25"H 29 mm OD X 32 mm H
Weight.....	70 grams
Case Material.....	Stainless Steel (304)
Face Material.....	Ceramic
Connector.....	BNC
Connector Locations.....	Side

Electrical

Gain.....	40 dB
Power Requirements.....	20-30 VDC @ 25 mA
Dynamic Range.....	> 87 dB
Noise Level (RMS RTI).....	< 3 μV
Output Drive Impedance.....	50 Ω
Grounding.....	Case Grounding, Isolated from mounting surface

ORDERING INFORMATION AND ACCESSORIES

R50I-AST.....	R50I-AST
Cable (specify length in 'XX' m at end of PN).....	1234 - X
Magnetic Hold-Down.....	MHR50I
Amplifier Subsystems.....	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty

* AST — Auto Sensor Testing feature allows AE systems to control the sensor as a pulser and a receiver at the same time. It can therefore characterize its own condition as well as send out a simulated acoustic emission wave that other sensors can detect, so the condition of the nearby sensors also can be tested.



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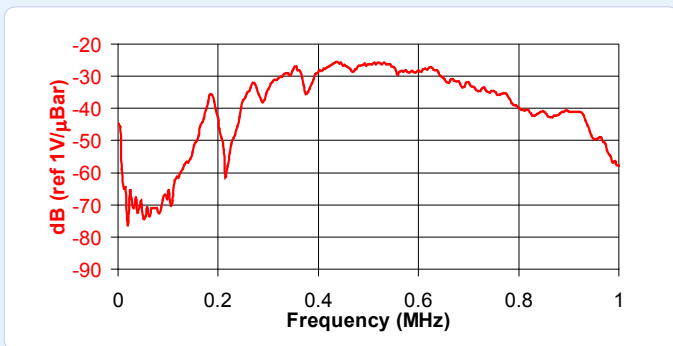
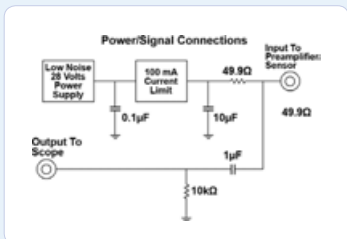
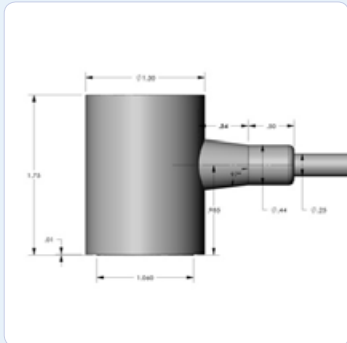
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PRODUCT DATA SHEET

R50I-UC Sensor

Underwater Sensor



DESCRIPTION AND FEATURES

R50I-UC is an underwater sensor with integrated preamplifier. It is a narrowband sensor with very high sensitivity featuring an integral preamplifier with a gain of 40 dB. The integrated electronics give the sensor a signal-to-drive capability for depths of 300 meters (1000 ft) or more. The sensors feature special polymer coatings making it 100% insulated and non conductive with an integral waterproof cable for underwater use. The sensor is tested to depths of 1000 psi.

APPLICATIONS

The sensor can be used for the structural health monitoring of submerged structures like offshore oil and gas platforms, ships etc. They can be used inside any liquid filled platforms like pipelines, chemical tanks or any other submerged structures.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	86 dB
Peak Sensitivity, Ref V/μbar	-28 dB
Operating Frequency Range	300-550 KHz
Resonant Frequency, Ref V/(m/s)	300 dB
Resonant Frequency, Ref V/μbar	500 KHz
Directionality	+/- 1.5 dB

Environmental

Temperature Range	-35 to 65°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	1.31"OD X 1.38"H
	33 mm OD X 35 mm H
Weight	180 grams
Case Material	Stainless Steel/Epoxy
Face Material	Ceramic
Connector	BNC on integral cable
Connector Locations	Side

Electrical

Gain	40 dB
Power Requirements	20-30 VDC @ 25 mA
Dynamic Range	> 87 dB
Noise Level (RMS RTI)	< 3 μV
Output Drive Impedance	50 Ω
Grounding	Case Grounding
	Isolated from mounting surface

ORDERING INFORMATION AND ACCESSORIES

R50I-UC	R50I-UC
Cable (specify length in 'XX' m at end of PN)	1234-X
Pre-amplifier	0/2/4, 2/4/6, 1220

Sensors include

NIST Calibration Certificate & Warranty



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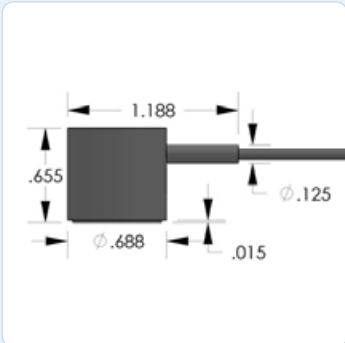
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PRODUCT DATA SHEET

R50S Sensor

General Purpose Sensor

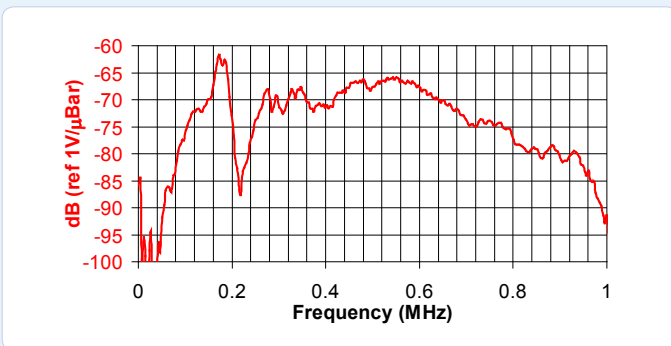


DESCRIPTION AND FEATURES

R50S is designed as a narrow band sensor to have a very high sensitivity to AE signals. It has a very good frequency response over the range of 100 – 700 kHz. This sensor features a rugged steel construction with an integrated coaxial cable exiting from the side with a BNC connector. The small size of the sensor makes it particularly suitable for mounting in tight spaces.

APPLICATIONS

This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. Narrow band sensors are well suited for applications requiring the sensor to pick up low level AE signals. It can be easily mounted using epoxy.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 62 dB
 Peak Sensitivity, Ref V/μbar -62 dB
 Operating Frequency Range 100-700 kHz
 Resonant Frequency, Ref V/(m/s) 100 kHz
 Resonant Frequency, Ref V/μbar 500 kHz
 Directionality +/-1.5 dB

Environmental

Temperature Range -65 to 177°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 0.7" OD X 0.65" H
 18 mm OD X 17 mm H
 Weight 20 grams
 Case Material Stainless steel
 Face Material Ceramic
 Connector BNC
 Connector Locations Side

ORDERING INFORMATION AND ACCESSORIES

R50S R50S
 Cable (specify length '-XX' m at end of PN) 1 m
 Magnetic Hold-Down MHSTD
 Pre-Amplifier 0/2/4, 2/4/6
 Amplifier subsystems ... AE2A, AE5A or standard AE systems
 Preamp to System Cable (specify length in 'm') 1234-X

Sensors include

NIST Calibration Certificate & Warranty



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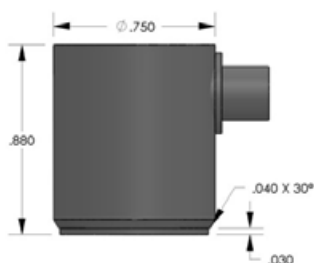
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R80α Sensor

General Purpose, 800 kHz Resonant Frequency Sensor



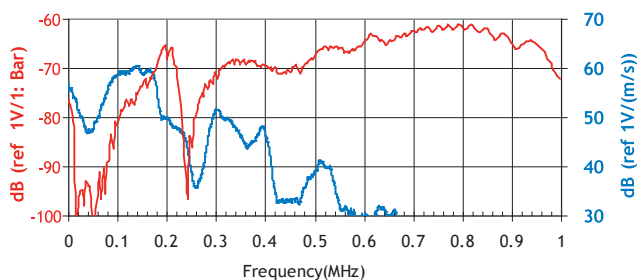
DESCRIPTION AND FEATURES

The R80α is a narrow band resonant sensor with a high sensitivity. The sensor cavity is machined from a solid stainless steel rod, making the sensor extremely rugged and reliable. The ceramic face along with a 30 degree chamfer to cavity electrically isolates the sensor cavity from the structure under test assuring a low noise operation.

The compact size of the sensor makes it readily suitable for deploying in tight spaces for monitoring. The Alpha series family of sensors features an SMA connector versus the Microdot connectors found on MISTRAS' RXX series of sensors. The alpha series includes R3α, R6α, R15α, R30α, R50α, R80α and WSα sensors.

APPLICATIONS

High frequency AE sensors such as the R80α are often used in a high noise environments on applications such as brittle crack detection and processing of AE signals with high frequency components.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	58 dB
Peak Sensitivity, Ref V/μbar	-62 dB
Operating Frequency Range	200-1000 kHz
Resonant Frequency, Ref V/(m/s)	200 kHz
Resonant Frequency, Ref V/μbar	800 kHz

Environmental

Temperature Range	-65 to 175°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.75"OD X 0.84"H
	19 mm OD X 21.4 mm H
Weight	32 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector	SMA
Connector Locations.....	Side
Seal.....	Epoxy
Sensor to Preamp Cable (1 or 2 meters)	1232-X-SMA

ORDERING INFORMATION AND ACCESSORIES

R80α	R80α or R80a
Magnetic Hold-Down	MHR15A
Amplifier subsystems ... AE2A, AE5A or standard AE systems	
Preamplifier	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234 - X

Sensors include

NIST Calibration Certificate & Warranty



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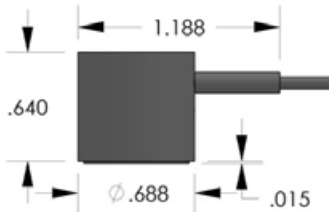
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PRODUCT DATA SHEET

R80D Sensor

General Purpose Sensor

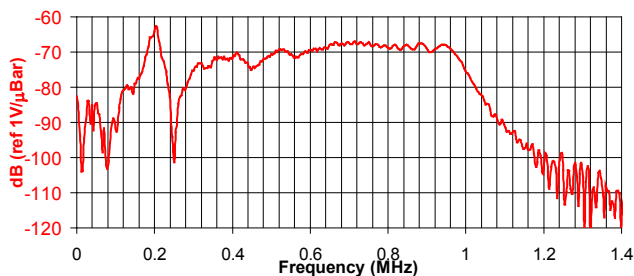


DESCRIPTION AND FEATURES

R80D is a differential sensor designed to isolate the sensing terminals electrically from the cavity. This electrical isolation makes the sensor particularly useful for applications where high background electrical noise is a major concern. It has a very good sensitivity and frequency response over the range of 200 – 1000 kHz. The two signal leads from the sensing element feed into a differential pre-amplifier which eliminates common-mode noise resulting in a lower noise output from the pre-amplifier. This sensor features a rugged steel construction and a dual BNC connector with an integrated twin axial cable exiting on the side.

APPLICATIONS

The sensor can be used in applications that require very good EMI shielding, high sensitivity. Typical applications for the sensor include monitoring big power transformers, large steel and concrete structures.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	58 dB
Peak Sensitivity, Ref V/μbar	-62 dB
Operating Frequency Range	200-1000 kHz
Resonant Frequency, Ref V/(m/s)	200 kHz
Resonant Frequency, Ref V/μbar	800 kHz

Environmental

Temperature Range	-65 to 177°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.7"OD X 0.65"H
	18 mm OD X 17 mm H
Weight	23 grams
Case Material.....	Stainless steel
Face Material.....	Ceramic
Connector	Dual BNC
Connector Locations.....	Side
Grounding.....	Internal (isolated from casing)

ORDERING INFORMATION AND ACCESSORIES

R80D	R80D
Cable (specify cable length 'XX' m at end of PN).....	1 m
Preamp to System Cable (specify length in 'm')	1234-X
Magnetic Hold-Down	MHSTD
Preamplifier	0/2/4, 2/4/6
Amplifier subsystems ...	AE2A, AE5A or standard AE systems

Sensors include

NIST Calibration Certificate & Warranty



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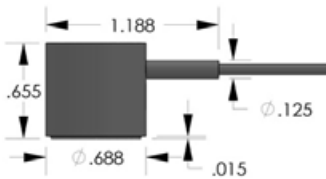
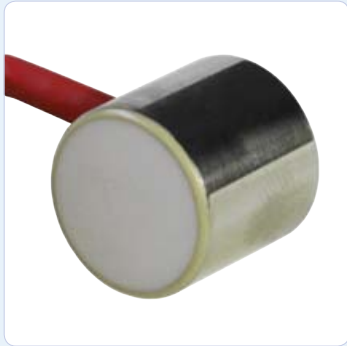
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PRODUCT DATA SHEET

R80S Sensor

General Purpose Sensor

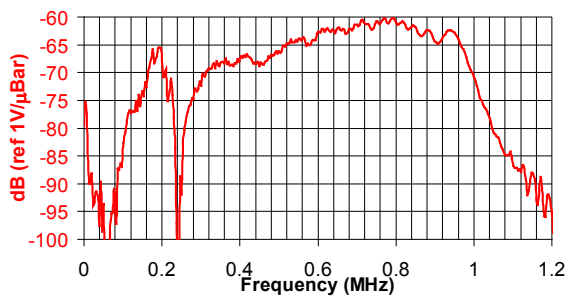


DESCRIPTION AND FEATURES

R80S is a high frequency sensor with a very high sensitivity and bandwidth. It has a very good frequency response over the range of 200 – 1000 kHz. This sensor is an ideal candidate for applications requiring high sensitivity to AE signals and wide bandwidth. This sensor features a rugged steel construction with an integrated coaxial cable exiting on the side with a BNC connector. The small size of the sensor makes it particularly suitable for mounting in tight spaces.

APPLICATIONS

This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. Wideband sensors are well suited for applications requiring high fidelity AE signals for noise discrimination and source identification. It can be easily mounted using epoxy.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 58 dB
 Peak Sensitivity, Ref V/μbar -62 dB
 Operating Frequency Range 200-1000 kHz
 Resonant Frequency, Ref V/(m/s) 200 kHz
 Resonant Frequency, Ref V/μbar 800 kHz
 Directionality +/-1.5 dB

Environmental

Temperature Range -65 to 177°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions 0.7" OD X 0.65" H
 18 mm OD X 17 mm H
 Weight 18 grams
 Case Material Stainless steel
 Face Material Ceramic
 Connector BNC
 Connector Locations Side

ORDERING INFORMATION AND ACCESSORIES

R80S R80S
 Cable (specify cable length 'XX' m at end of PN) 1 m
 Magnetic Hold-Down MHSTD
 Pre-amplifier 0/2/4, 2/4/6
 Preamp to System Cable (specify length in 'm') 1234-X
 Amplifier subsystems ... AE2A, AE5A or standard AE systems

Sensors include

NIST Calibration Certificate & Warranty



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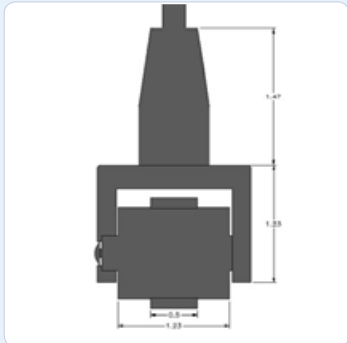
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PRODUCT DATA SHEET

RS30 Sensor

Rolling Sensor



DESCRIPTION AND FEATURES

The RS30 is a rolling AE sensor built in an Aluminum cavity with a microdot connector. The sensor is designed to have a very high sensitivity and a narrow band with a resonant frequency of 300 kHz. It uses a dry couplant while rolling which makes it an ideal candidate for automated and robotic inspections.

APPLICATIONS

The sensor is primarily designed for non destructive inspection of large structures. Its smooth rolling feature helps operators quickly inspect large areas. Typically used with crawlers or robotic arms for inspection.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/ μ bar -74 dB
 Operating Frequency Range 160-340 KHz
 Resonant Frequency, Ref V/(m/s) 300 dB
 Directionality +/- 1.5 dB

Environmental

Temperature Range 0 to 125°C
 Shock Limit 500 g
 Completely enclosed crystal for RFI/EMI immunity

Physical

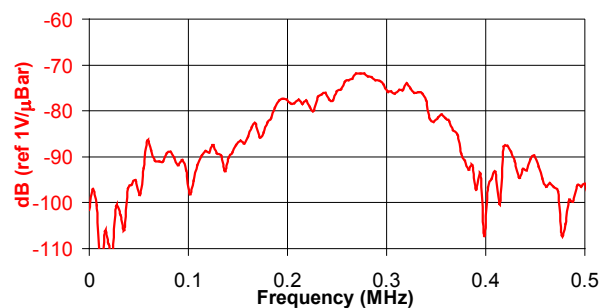
Dimensions 1.19"OD X 1.22" long wheel
 30.2 mm OD X 31 mm long wheel
 Weight 200 grams
 Case Material Anodized Aluminum
 Face Material Silicone rubber
 Connector Microdot
 Connector Locations Side

ORDERING INFORMATION AND ACCESSORIES

RS30 RS30
 Cable (specify length in 'XX' m at end of PN) 1232-1
 Pre-amplifier 0/2/4, 2/4/6
 Preamp to System Cable (specify length in 'm') 1234-X
 Amplifier Subsystems AE2A or AE5A

Sensors include

NIST Calibration Certificate & Warranty



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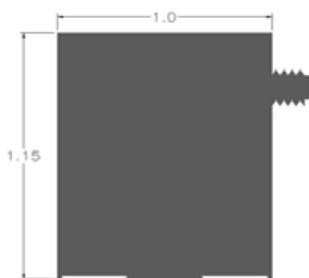
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S9208 Sensor

Wideband Sensor

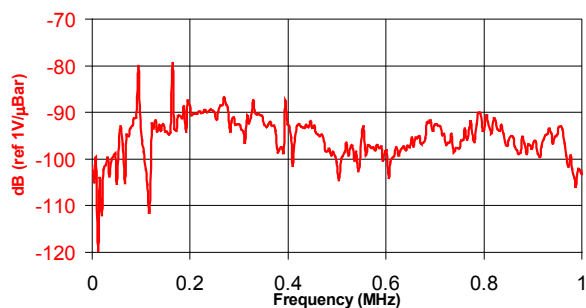


DESCRIPTION AND FEATURES

S9208 is a high fidelity displacement sensor. It is specially designed to provide a flat frequency response to surface acoustic displacement over its entire frequency bandwidth. It is primarily designed for research applications for studying the surface displacement of structures due to different AE modes. It can be used in applications requiring frequency analysis to characterize different kinds of defects. The sensor features a rugged stainless steel body with a microdot connector on the side of the sensor.

APPLICATIONS

The sensor can be used in applications requiring a flat frequency response over the sensor bandwidth and very sensitive to the surface acoustic waves. It can easily be mounted using epoxy.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	45 dB
Peak Sensitivity, Ref V/μbar	-85 dB
Operating Frequency Range	200-1000 kHz
Resonant Frequency, Ref V/(m/s)	500 kHz
Resonant Frequency, Ref V/μbar	500 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-54 to 121°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	1"OD X 1"H
	25 mm OD X 25 mm H
Weight	90 grams
Case Material.....	Stainless Steel
Face Material.....	Stainless Steel
Connector	Microdot
Connector Locations.....	Side

ORDERING INFORMATION AND ACCESSORIES

S9208.....	S9208
Cable (specify length in 'XX' m at end of PN)	1232-1
Pre-amplifier.....	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234-X
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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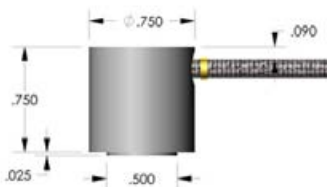
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PRODUCT DATA SHEET

S9215 Sensor

High Temperature Sensor



DESCRIPTION AND FEATURES

The S9215 is a high temperature radiation resistant sensor, specially designed for the nuclear power industry. It features a rugged cavity made from Inconel 600 and an integral 2 ft long "hard-line" cable. The hardline cable is crimped to a softline coaxial cable made from Tefzel which interfaces the sensor to instrumentation. The sensor is tightly sealed by welding for use in harsh nuclear environment. The sensor has a 100 kHz resonance frequency and 80 kHz to 560 kHz bandwidth. All the materials used in this sensor have been proven for use in nuclear environments. The Maximum operating temperature of the sensor is 540°C and the softline cable can be operated at a maximum temperature of 150°C.

APPLICATIONS

The sensor is suitable for use in high temperature radiation environments such as in Nuclear Power Plants. They can be used for monitoring high temperature equipment in power plants, aerospace engine monitoring, pipelines etc.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s) 52 dB
 Peak Sensitivity, Ref V/ μ bar -82 dB
 Operating Frequency Range 50-650 KHz
 Resonant Frequency, Ref V/(m/s) 60 dB
 Resonant Frequency, Ref V/ μ bar 100 KHz
 Directionality +/- 1.5 dB

Environmental

Temperature Range -65 to 177°C
 Relative Humidity 90%
 Shock Limit 10,000 g
 Gamma ray 40 yr integrated dose (rads) 1×10^9
 Neutron flux 40 yr integrated dose (n/cm²) 2.23×10^{17}

Physical

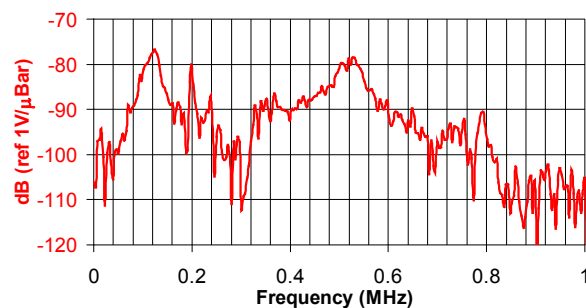
Dimensions 0.8" OD X 0.8" H
 20 mm OD X 20 mm H
 Weight 60 grams (with hardline and w/o softline)
 Case Material Inconel 600
 Face Material Inconel 600
 Connector Dual BNC on softline
 Connector Locations Side
 Seal Welding
 Impedance (conduction to ground) >20 M Ω

ORDERING INFORMATION AND ACCESSORIES

S9215 S9215
 Cable (specify length in 'XX' m at end of PN) 1234-X
 Pre-amplifier 2/4/6, 1220
 Preamp to System Cable (specify length in 'm') 1234-X
 Amplifier Subsystems AE2A, AE5A
 Other IS Sensors are available with various resonant frequencies.

Sensors include

NIST Calibration Certificate & Warranty



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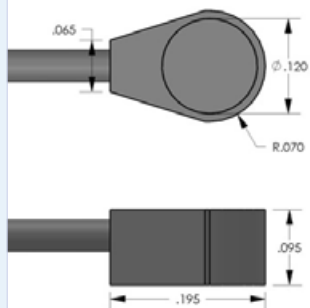
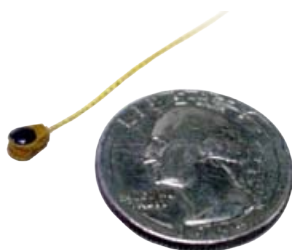
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S9225 Sensor

Miniature Sensor

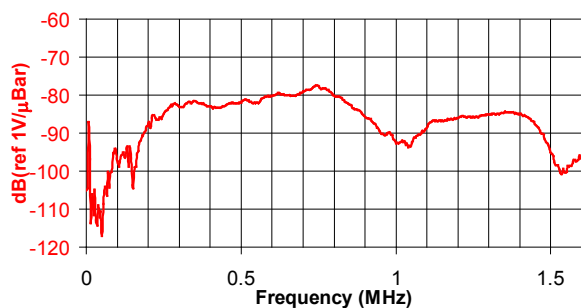


DESCRIPTION AND FEATURES

S9225 miniature sensor with a size of 3.6 mm x 2.4 mm is the smallest AE sensor on offer. It has good sensitivity and a very wide bandwidth. Its small size and negligible weight makes it an ideal candidate for applications imposing severe constraints on the size and weight of the sensors. The sensor features an anodized aluminum cavity with an integral coaxial cable exiting from the side of the sensor with a BNC connector to interface with instrumentation.

APPLICATIONS

The sensor is ideally suited for structural health monitoring of critical infrastructure like aircrafts, tanks etc. It can be used in any application with a noisy environment and requiring a small sensor and very high bandwidth for frequency analysis of the AE signal sources and noise discrimination. It can easily be mounted using epoxy and can be mounted in small and tight spaces.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	48 dB
Peak Sensitivity, Ref V/ μ bar.....	-77.5 dB
Operating Frequency Range.....	300-1800 kHz
Resonant Frequency, Ref V/(m/s).....	250 kHz
Resonant Frequency, Ref V/ μ bar.....	600 kHz
Directionality.....	+/- 1.5 dB

Environmental

Temperature Range -54 to 121°C
Shock Limit 500 g
Completely enclosed crystal for RFI/EMI immunity

Physical

Dimensions.....0.15"OD X 0.1"H
3.6 mm OD X 2.4 mm H
Weight.....<1 gram (10 grams with cable & connector)
Case Material.....Anodized Aluminum
Face Material.....Anodized Aluminum
Connector.....BNC on integral cable
Connector Locations.....Side

ORDERING INFORMATION AND ACCESSORIES

S9225.....	S9225
Cable (specify cable length).....	0.6 m
Preamplifier.....	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234-x
Amplifier Subsystems	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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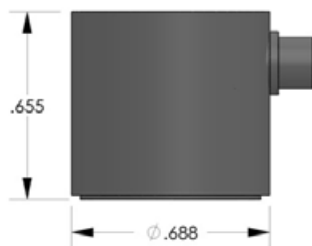
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UT-1000 Sensor

Wideband Sensor

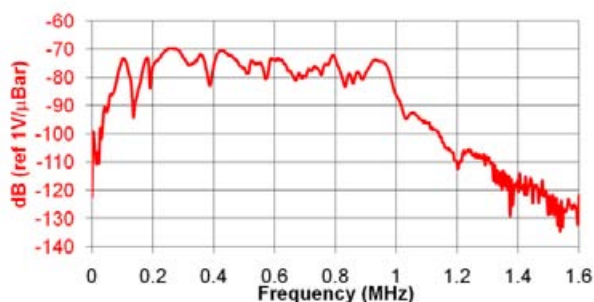


DESCRIPTION AND FEATURES

UT-1000 is a wideband sensor with a good frequency response over the range of 100-1000 kHz. This sensor is extremely stable with respect to fluctuations in environmental parameters like temperature and humidity. Its wide frequency bandwidth makes the sensor an ideal candidate for applications involving large number of AE modes. The sensor features a small diameter, microdot connector on the side of the sensor.

APPLICATIONS

This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. Wideband sensors are well suited for research applications where a high fidelity AE response is required. It can be easily mounted using epoxy.



PRODUCT DATA SHEET

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	64 dB
Peak Sensitivity, Ref V/μbar	-73 dB
Operating Frequency Range	100-950 kHz
Resonant Frequency, Ref V/(m/s)	60 kHz
Resonant Frequency, Ref V/μbar	450 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-65 to 177C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions	0.7"OD X 0.65"H 17.8 mm OD X 16.5 mm H
Weight	20 grams
Case Material	Stainless Steel
Face Material	Ceramic
Connector	Microdot
Connector Locations	Side

ORDERING INFORMATION AND ACCESSORIES

UT-1000	UT-1000
Cable (specify length in 'XX' m at end of PN)	1232-1
Magnetic Hold-Down	MHSTD
Preamplifier	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234-X
Amplifier Subsystems	AE2A or AE5A

Sensors include

NIST Calibration Certificate & Warranty



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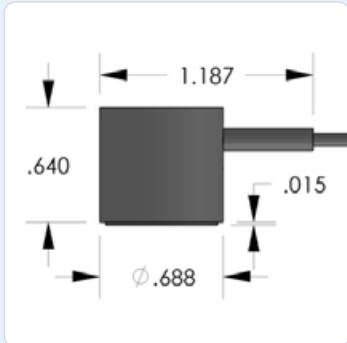
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PRODUCT DATA SHEET

WD Sensor

Wideband Differential Sensor



DESCRIPTION AND FEATURES

WD is a true differential wideband sensor with a very high sensitivity and bandwidth. It has a very good frequency response over the range of 100 – 900 kHz. Differential sensors differ from their general purpose counterparts by employing two sensing elements with opposite polarization directions. The two signal leads feed into a differential pre-amplifier which eliminates common-mode noise resulting in a lower noise output from the pre-amplifier. Noise improvements to the tune of 2 dB can be achieved using differential sensors over a single ended sensor. This sensor features a rugged steel construction with an integrated twin axial cable exiting on the side.

APPLICATIONS

This sensor is well suited for structural health monitoring of large structures like storage tanks, pipelines etc. This sensor is an ideal candidate for applications requiring high bandwidth for frequency analysis of the AE signals for noise discrimination and source identification. Wideband sensors are particularly well suited for research applications where a high fidelity AE response is required. It can be easily mounted using epoxy.

OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s)	56 dB
Peak Sensitivity, Ref V/ μ bar	-61 dB
Operating Frequency Range	125-1000 kHz
Resonant Frequency, Ref V/(m/s)	125 kHz
Resonant Frequency, Ref V/ μ bar	450 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-65 to 177°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

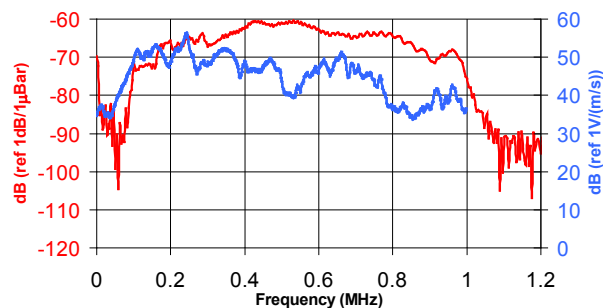
Dimensions	0.7" OD X 0.65" H 17.8 mm OD X 16.5 mm H
Weight	20 grams
Case Material	Stainless Steel
Face Material	Ceramic
Connector	BNC
Connector Locations	Side

ORDERING INFORMATION AND ACCESSORIES

WD	WD
Cable (specify length in 'XX' m at end of PN)	1 m
Magnetic Hold-Down	MHSTD
Pre-Amplifier	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234-X
Amplifier Subsystems	AE2A or AE5A

Sensors include

NIST Calibration Certificate & Warranty



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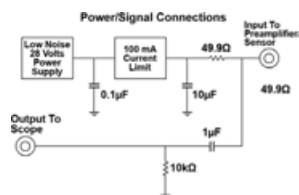
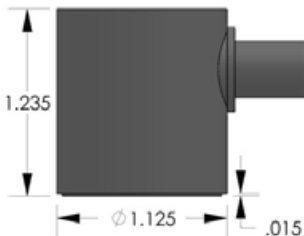
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PRODUCT DATA SHEET

WDI-AST Sensor

Integral Preamplifier Sensor



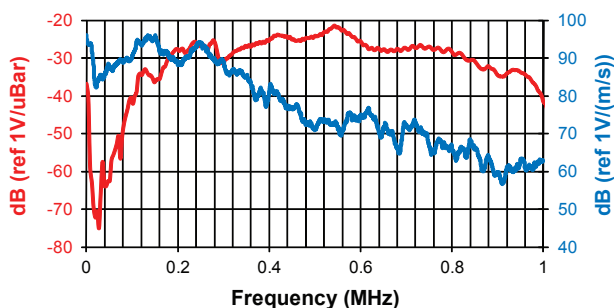
DESCRIPTION AND FEATURES

PAC's integral preamp sensors were specifically engineered to attain high sensitivity and have the capability to drive long cables without the need for a separate preamplifier. Incorporating a low-noise input, 40 dB preamplifier and a filter all inside the sensor housing, these transducers are completely enclosed in metal stainless steel (or aluminum) housings that are treated to minimize RFI/EMI interference. Care has also been taken to thermally isolate the critical input stage of the preamplifier in order to provide excellent temperature stability over the range of -35° to 75° C.

Their integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time throughout the test.

APPLICATIONS

Wideband sensors are typically used in research applications and other applications where a high fidelity AE response is required. In research applications, wideband AE sensors are useful where frequency analysis of the AE signal is required and to help determine the predominant frequency band of AE sources for noise discrimination and selection of a suitable lower cost, general purpose AE sensor. In high fidelity applications, wideband sensors can detect various AE wavemodes to provide more information about the AE source and distance of the AE event.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	96 dB
Peak Sensitivity, Ref V/μbar.....	-25 dB
Operating Frequency Range.....	200-900 kHz
Directionality.....	+/-1.5 dB

Environmental

Temperature Range.....	-35 to 75°C
Shock Limit.....	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	1.13"OD X 1.16"H
	29 mm OD X 30 mm H
Weight.....	70 grams
Case Material.....	Stainless Steel (304)
Face Material.....	Ceramic
Connector.....	BNC
Connector Locations.....	Side

Electrical

Gain.....	40 dB
Power Requirements.....	20-30 VDC @ 25 mA
Dynamic Range.....	> 87 dB
Noise Level (RMS RTI).....	< 3 μV
Output Drive Impedance.....	50 Ω
Grounding.....	Case Grounding,
 Isolated from mounting surface

ORDERING INFORMATION AND ACCESSORIES

WDI-AST.....	WDI-AST
Cable (specify length in 'XX' m at end of PN).....	1234 - X
Magnetic Hold-Down.....	MHR6I
Amplifier Subsystems.....	AE2A, AE5A

Sensors include

NIST Calibration Certificate & Warranty



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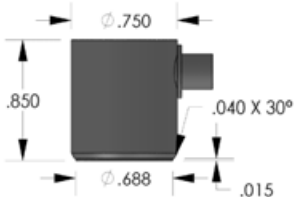
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PRODUCT DATA SHEET

WSα Sensor

General Purpose Wideband Sensor



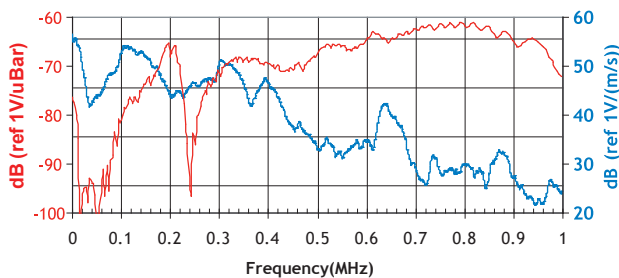
DESCRIPTION AND FEATURES

The WSα sensor is a single-ended, wideband frequency, Acoustic Emission sensor. Featuring a SMA connector within an integrated stainless steel cavity, the WSα is machined from a solid rod. A 30-degree angle at the bottom edge of the sensor cavity reduces the risk of electric shorts from the sensor cavity to conductive test surfaces.

The WSα takes advantage of the general Alpha series (consisting of R3α, R6α, R15α, R30α R50α, R80α and WSα sensors) sensor features and the WD sensor's high sensitivity and wideband frequency range.

APPLICATIONS

Wideband sensors are typically used in research applications or other applications where a high fidelity AE response is required. In research applications, wideband AE sensors are useful where frequency analysis of the AE signal is required and in helping determine the predominant frequency band of AE sources for noise discrimination and selection of a suitable lower cost, general purpose AE sensor. In high fidelity applications, various AE wavemodes can be detected using wideband sensors, providing more information about the AE source and distance of the AE event.



OPERATING SPECIFICATIONS

Dynamic

Peak Sensitivity, Ref V/(m/s).....	55 dB
Peak Sensitivity, Ref V/μbar	-62 dB
Operating Frequency Range	100-1000 kHz
Resonant Frequency, Ref V/(m/s)	125 kHz
Resonant Frequency, Ref V/μbar	650 kHz
Directionality	+/-1.5 dB

Environmental

Temperature Range	-65 to 175°C
Shock Limit	500 g
Completely enclosed crystal for RFI/EMI immunity	

Physical

Dimensions.....	0.75"OD X 0.84"H
	19 mm OD X 21.4 mm H
Weight	32 grams
Case Material.....	Stainless Steel
Face Material.....	Ceramic
Connector	SMA
Connector Locations.....	Side
Seal	Epoxy
Sensor to Preamp Cable (1 or 2 meters)	1232-X-SMA

ORDERING INFORMATION AND ACCESSORIES

WSα	WSα or WSα
Cable (specify length in 'XX' m)	1234-SMA/BNC-X
Magnetic Hold-Down	MHR15A
Preamplifier	0/2/4, 2/4/6
Preamp to System Cable (specify length in 'm')	1234 - X

Sensors include

NIST Calibration Certificate & Warranty



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