

**Product:** **Bruker 5 mm SmartProbe™ 400 MHz (standard probe)**

**Description:** The Bruker SmartProbe™ is an observe broadband high resolution probe for 5 mm sample diameters and 400 MHz standard-bore magnets. The inner NMR coil can be tuned to observe <sup>19</sup>F or any nucleus in the range from <sup>31</sup>P-<sup>199</sup>Hg and <sup>17</sup>O-<sup>109</sup>Ag. The outer NMR coil is tuned for either <sup>1</sup>H decoupling or observation. The actively shielded high performance Z-gradient has been designed for highest linearity and shortest gradient recovery times. A key feature which this probe offers is the ability to observe <sup>19</sup>F with <sup>1</sup>H decoupling and to perform two-dimensional <sup>1</sup>H/<sup>19</sup>F spectroscopy with superior quality. This probe facilitates superior single or multiple solvent suppression using presaturation or pulsed field gradients as required for samples from reaction control, biological samples and body fluids. The probe is fitted with a <sup>2</sup>H lock channel. Any nucleus can be fully automatically selected and optimally tuned and matched (ATM).

**Specification:**

<b>Signal/Noise</b>		
<sup>1</sup> H sensitivity	≥ 550:1	(0.1% EB; 200 Hz noise; LB=1 Hz; s=0.23 mm) <sup>1</sup>
<sup>19</sup> F sensitivity (1H dec)	≥ 500:1	(TFT; 1ppm noise; LB=0.5 Hz; s=0.38mm) <sup>1</sup>
<sup>13</sup> C sensitivity	≥ 210:1	(ASTM; 40ppm noise; LB=3.5 Hz; s=0.23mm) <sup>1</sup>
	≥ 230:1	(ASTM; 5ppm noise; LB=3.7 Hz; s=0.23mm) <sup>1,2</sup>
<sup>13</sup> C sensitivity (1H dec)	≥ 230:1	(10% EB; 40ppm noise; LB=0.3 Hz; s=0.23mm) <sup>1</sup>
	≥ 265:1	(10% EB; 5ppm noise; LB=0.1 Hz; s=0.23mm) <sup>1,2</sup>
<sup>31</sup> P sensitivity	≥ 200:1	(TPP; 5ppm noise; LB=5 Hz; s=0.38mm) <sup>1</sup>
<sup>15</sup> N sensitivity	≥ 30:1	(90% Formamide; 2ppm noise; LB=0.3 Hz; s=0.38mm) <sup>1</sup>
<b>Pulse Widths</b>		
<sup>1</sup> H pulse width	≤ 10 μs	
<sup>19</sup> F pulse width	≤ 18 μs	
<sup>13</sup> C pulse width	≤ 10 μs	
<sup>31</sup> P pulse width	≤ 8 μs	
<sup>15</sup> N pulse width	≤ 21 μs	
<b>Lineshape</b>		
<sup>13</sup> C spinning lineshape	≤ 0.2/2/4 Hz	(50%/0.55%/0.11%, ASTM)
<sup>1</sup> H spinning lineshape	≤ 0.5/6/12 Hz	(50%/0.55%/0.11%, 1% CHCl <sub>3</sub> )
<sup>1</sup> H non-spinning	≤ 0.8/7/14 Hz	(50%/0.55%/0.11%, 1% CHCl <sub>3</sub> )
<b>Z-Gradient</b>		
Gradient strength	≥ 0.5 T/m	(max current 10 A) <sup>2</sup>
Gradient recovery time	≤ 100 μs	(95% signal amplitude) <sup>2,3</sup>
<b>Variable Temperature Range</b>		
Standard Range	-150°C to +150°C <sup>2,4</sup>	

**Model:** Z163739, PI HR-400-S1-BBF/H/D-5.0-Z SP

Performance is specified with an Avance NEO™ spectrometer or higher using US or US <sup>plus</sup> or Ascend magnets with a BOSS3-SB shim system.

Technical data and specifications subject to change without notice.  
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1)  $s$  = wall thickness of sample tube

2) Specifications verified at production, not at installation

3) With sample 0.1 mg GdCl<sub>3</sub> / ml D<sub>2</sub>O + 1% H<sub>2</sub>O + 0.1% CH<sub>3</sub>OH; 5 ms gradient square pulses with strength +/- 37.5 G/cm

4) The shim system temperature must not be allowed to exceed +80°C. At low temperatures, precautions must be taken to prevent the magnet dewar O-rings from freezing.