

The Model XZR100-2-2 is a high accuracy, high spatial resolution and temperature compensated two-axis magnetic field measurement system. It is particularly suitable for high resolution measurements of **undulator or wiggler magnet systems**. Cross-coupling effects between the axes in magnetic fields up to 2 tesla are smaller than 0.1%. The XZR100-2-2 has a basic accuracy of 1%.

The transducer consists of two modules connected by a flexible cable (see Fig.1). The magnetic field sensitive module H contains a very high quality 2-axis Hall element. The unique feature of this device is that it measures the axial and one transversal magnetic field component at a single point. To build up a complete measurement system, connect the module E with a simple power supply and two voltmeters. The system can be calibrated according to specific needs of field conditions.

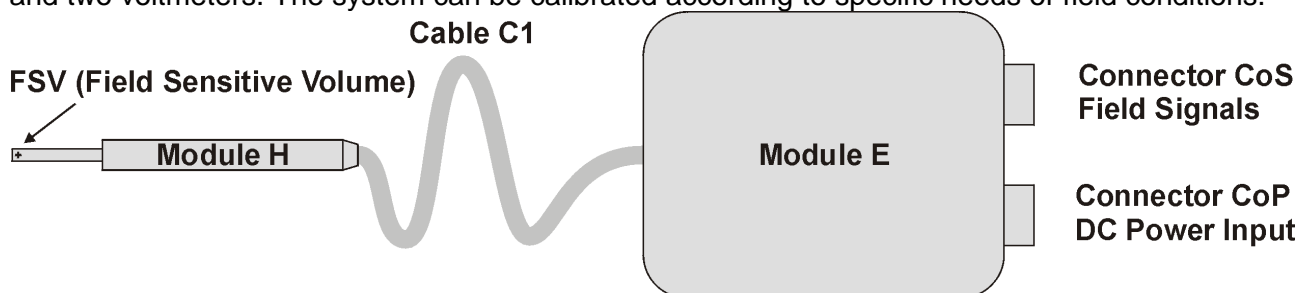


Figure 1: Structure of the Two-Axis Magnetic Field Hall Transducer XZR100-2-2

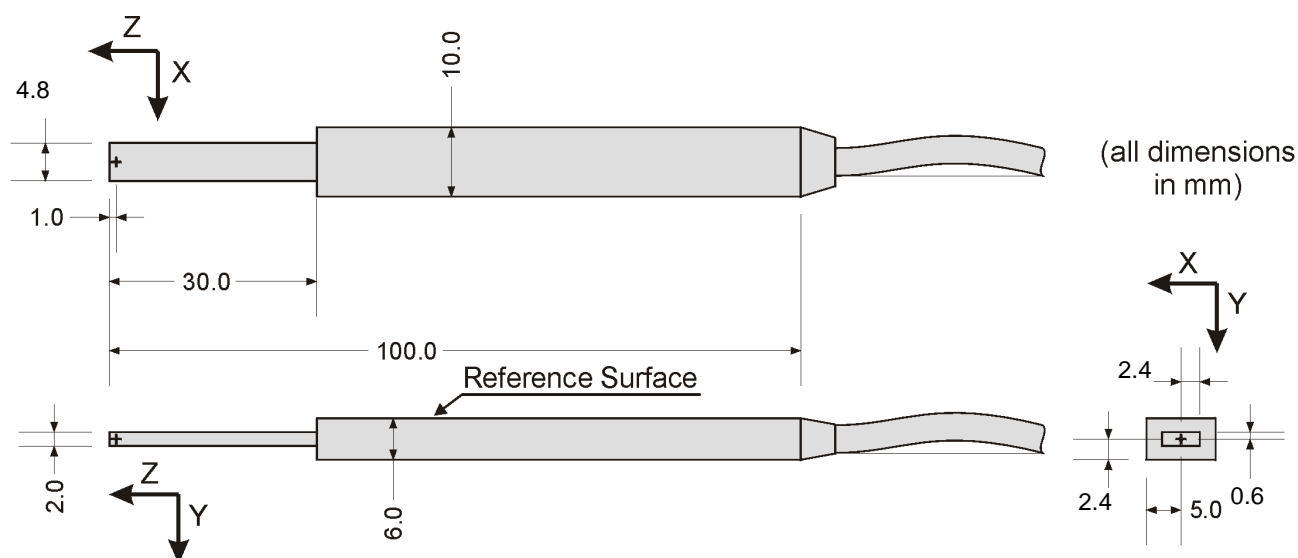


Figure 2: Probe dimensions of the Two-Axis Magnetic Field Hall Transducer XZR100-2-2 (Module H)

Specifications:

(Specifications are given at operating temperature of 23°C and after a warm-up time of 10 minutes.)

Output signal for channels X & Z

Maximum magnetic field	± 3 T
Linear magnetic field range	± 2 T (full scale)
Output voltage at full-scale (VB)	±10.000V, differential
Sensitivity to magnetic field	5 V/T (0.5mV/G)
Tolerance of sensitivity (B = 1T)	± 1 %
Non linearity along x-axis (B< 2T)	< 1%
Non linearity along z-axis (B< 2T)	< 1%
Cross-coupling between x and z outputs	< 0.1%
Temp. coefficient of sensitivity (T= 23 ± 10°C)	< 100 ppm /°C
Offset at B = 0T	< ± 3mV

Temp. coefficient of offset	< 0.3 mV/°C
Output noise and ripple (p-p) 0.01..100Hz	< +/-50µV (0.1 Gauss)
Output resistance	< 10 ohm, short circuit proof

Frequency response

Bandwidth X & Z- Channel (-3dB)	> 1kHz
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Environmental

Temperature (operating)	10° to 50°C
(storage)	-20° to 85°C
Electromagnetic	see EMC-Test conditions
RF conducted disturbances	IEC/EN 61000-4-6, ENV 50141
Radiated electromagnetic field	ENV 50140
Pulse modulated electromagnetic field	ENV 50140
Electrical fast transient burst	IEC/EN 61000-4-4
Electrostatic discharge	IEC/EN 61000-4-2 *

Mechanical

Coordinates	X	Y	Z
Field sensitive volume (FSV) physical	0.25 x	0.20 x	0.25 mm ³
Field sensitive volume (FSV) electrical	0.20 x	0.05 x	0.20 mm ³
Sensitive point (the center of FSV)	2.4,	1.4,	-1 mm
Angular accuracy of the axes	± 0.1° between axes ± 1° wrt reference surface of module H		
Transducer Probe Holder	10 x	6 x	70 mm Phenolic fabric
Probe-to-Electronics cable	permanently connected, shielded 2m standard length with ferrite sleeve		
Connector CoS	DIN KfV70, 7 pole, 60°. (Mating Plug, SV70) field signal X+, X- Pins 6 and 5 respectively field signal Z+, Z- Pins 2 and 1 respectively signal common Pin 7		
Connector CoP	DIN SFV50, 5 pole. (Mating Plug, KV50) power, +12V Pin 3 power, -12V Pin 1 power common Pin 2		
Electronics module	high mechanical strength, electrically shielded aluminum case 95 W x 120 L x 37 H mm with mounting provision.		

Power

Voltage	12V, -12V nominal, ±10%, protected to ±20V and against inverted polarity
Current	ca. 50mA

Magnetic Induction Field (B) Units

1T = 10kG, 1µT = 10mG

Recommended accessories:

Power supply S12-5 (±12 V) 110/220V
Zero gauss chamber ZG12
Output cable 1.5 meter: CO15