

Auxiliary field strengths below  $H_x < 1.5$  kA/m are not recommended, as small disturbances may flip the magnetization domains. Sometimes, the magnetic conditions in the application may provide enough  $H_x$  bias field stabilization. MEAS Germany can provide advice for customer specific magnet arrangements.

If a bias field  $H_x$  is not applied or  $H_x$  is less than 2.5 kA/m, the sensor may be used only in a limited field range  $H_y$ , depending on the present total bias field  $H_{x,tot}$ . In this case, it is strongly recommended to 'premagnetize' the sensor, i.e. align all magnetic domains consistently, prior to the measurement.

$H_{x,tot}$  is the sum of all acting magnetic fields in x direction at the sensor die.

**Do not use the sensor outside the safe operating area.** Leaving the safe operating area can destroy an existing premagnetization and therefore will lead to unreproducible sensor signals.

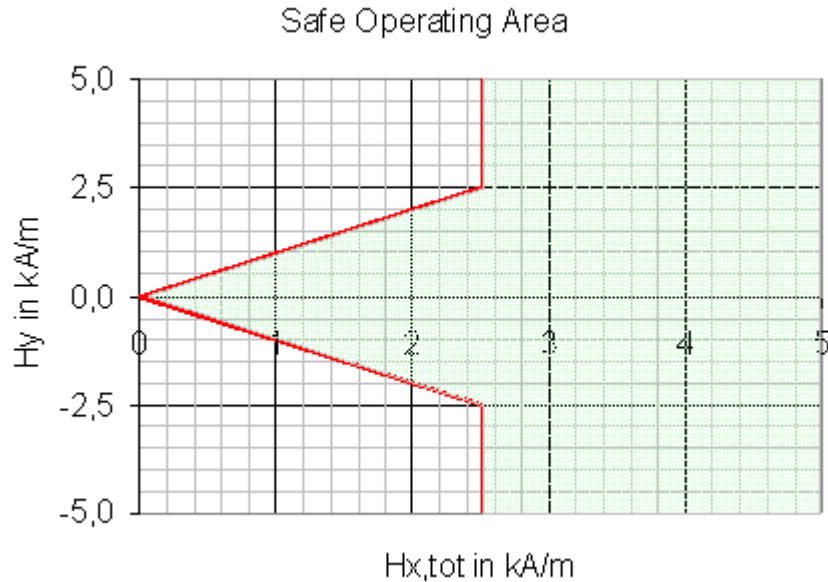


Figure 2: Safe operating area

### CHARACTERISTIC VALUES / SENSOR SPECIFICATIONS

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Operating Limits</b>						
max. supply voltage	$V_{cc,max}$				10	V
max. current	$I_{cc,max}$				9	mA
operating temperature	$T_{op}$		-40		+150	°C
storage temperature	$T_{st}$		-40		+150	°C
<b>General Sensor Specifications</b>						
TC of amplitude	TCSV	Condition A, C		-0.35		%/K
TC of resistance	TCBR	Condition A, C		+0.35		%/K
TC of offset	TCVoff	Condition A, C	-4	0	+4	$\mu$ V/V/K
<b>Sensor Specifications KMY 20 S, KMZ 20 S, KMY 22 (T=25 °C, <math>H_x=3</math> kA/m externally)</b>						
Supply voltage	$V_{cc}$	Condition A, B		5		V
Bridge resistance	$R_b$	Condition A, B	1200	1700	2200	$\Omega$
Output signal range	$\Delta V_0/V_{cc}$	Condition A, B	16	20	24	mV/V
Offset voltage	$V_{off}/V_{cc}$	Condition A, B	-1	0	+1	mV/V
Sensitivity	S	Condition A, B	3.7	4.7	5.7	mV/V/kA/m

Hysteresis	$V_H/V_{CC}$	Condition A, B	-	-	<b>50</b>	$\mu V/V$
<b>Sensor Specifications KMY 20 M, KMZ 20 M (T=25 °C, Hx=1.5±0.5 kA/m internally)</b>						
Supply voltage	$V_{CC}$	Condition A, B		<b>5</b>		V
Bridge resistance	$R_b$	Condition A, B	<b>1200</b>	<b>1700</b>	<b>2200</b>	$\Omega$
Output signal range	$\Delta V_0/V_{CC}$	Condition A, B	<b>16</b>	<b>20</b>	<b>24</b>	mV/V
Offset voltage	$V_{off}/V_{CC}$	Condition A, B	<b>-1.5</b>	<b>0</b>	<b>+1.5</b>	mV/V
Sensitivity	S	Condition A, B	<b>4</b>	<b>5.5</b>	<b>7</b>	mV/V/kA/m
Hysteresis	$V_H/V_{CC}$	Condition A, B	-	-	<b>50</b>	$\mu V/V$
<b>Sensor Specifications KMY 21 M (T=25 °C, Hx=2.5±1.0 kA/m internally)</b>						
Supply voltage	$V_{CC}$	Condition A, B		<b>5</b>		V
Bridge resistance	$R_b$	Condition A, B	<b>1100</b>	<b>1500</b>	<b>1900</b>	$\Omega$
Output signal range	$\Delta V_0/V_{CC}$	Condition A, B	<b>8</b>	<b>9.5</b>	<b>12</b>	mV/V
Offset voltage	$V_{off}/V_{CC}$	Condition A, B	<b>48</b>	<b>50</b>	<b>52</b>	%Vcc
Sensitivity	S	Condition A, B	<b>2.05</b>	<b>2.50</b>	<b>3.10</b>	mV/V/kA/m
Hysteresis	$V_H/V_{CC}$	Condition A, B	-	-	<b>50</b>	$\mu V/V$

Stress above one or more of the limiting values may cause permanent damage to the device. Exposure to limiting values for extended periods may affect device reliability.

### MEASUREMENT CONDITIONS

Parameter	Symbol	Unit	Condition
<b>Condition A: Set Up Conditions</b>			
Ambient temperature	T	°C	23±5 Measurement results are extrapolated to 25°C by using the given temperature coefficients
Supply voltage	$V_{CC}$	V	5
Output voltage	$V_O$ $V_O/V_{CC}$	mV mV/V	$V_O=(V_{0+} - V_{0-})$ Output voltages are also given independently on supply voltage: example: $V_O/V_{CC}=(V_{0+} - V_{0-})/V_{CC}$ ; measure MR half bridge against reference half bridge
Reference half bridge			2* 2 k $\Omega$ 0.1% (KMY21M only)
for full bridge sensors (KMY20S, KMY20M, KMY22, KMZ20S, KMZ20M)		for half bridge sensors (KMY 21 M)	